Université de Montréal

The Reception of Eugen Wüster's Work and the Development of Terminology

par

Ángela Campo

Département de linguistique et de traduction

Faculté des arts et des sciences

Thèse présentée à la Faculté des études supérieures

En vue de l'obtention du grade Philosophiae Doctor (Ph.D.)

en traduction

option terminologie

Octobre, 2012

Université de Montréal

Faculté des études supérieures

Cette thèse intitulée :

The Reception of Eugen Wüster's Work
and the Development of Terminology

présentée par :

Ángela Campo

a été évaluée par un jury composé des personnes suivantes :

Mme Marie-Claude L'Homme, président-rapporteur

Mme Monique C. Cormier, directrice de recherche

M. John Humbley, co-directeur

M. Patrick Drouin, membre du jury

Mme Danielle Candel, examinateur externe

Lyne Da Sylva, représentant du doyen de la FES

Abstract

The main objective of this dissertation is to explore and analyze the reception of Eugen Wüster's work with the goal of explaining how it has influenced the development of terminology as a discipline. In the history of terminology, Wüster's work, especially his general theory of terminology, has been an inspiration for terminology research studies. Nowadays, the reactions to Wüster's work have been both positive and negative. His legacy is still considered the cornerstone in the field of terminology.

Our specific undertaking is to explore the reception of Wüster's work by studying what has been said about it in the academic literature written in English, French and Spanish, between 1979 and 2009, in Europe and the Americas. This study, carried out within the context of debate on the reception of Wüster's work, focuses on analyzing the responses to and comments on his work. It takes into account his work, its positive and negative reception, new theoretical approaches to terminology and studies that have concentrated on analyzing the state of the art of terminology. The research process follows an exploratory method, focusing on studying texts where authors quote, cite or make reference to Wüster's work. It also falls under descriptive research studies as it accurately portrays the characteristics of the debate around the reception of his work.

The results are revealing, and lead to a more refined view of what comprises the reception of Wüster's work. First, Wüster is recognized as an important founding figure in modern terminology, as a pioneer of terminology standardization, and as the first author to propose a theory of terminology. Second, an adequate contextualization is an essential starting point for an accurate and appropriate appreciation of Wüster's contribution to the development of the discipline. Third, results uncovered how new theoretical approaches to terminology have coped with advances in technology and science. These approaches have also identified new methods, methodologies, applications and uses for terminology. Forth, a sample study of 166 academic journal articles confirms that Wüster work has generated mixed reactions in Europe and the Americas, and that its reception has been more positive than negative. Results indicate a strong interest in criticizing Wüster's work, yet a lack of familiarity with it seems to exist.

The "methodology of scientific research programmes" proposed by Lakatos (1978), applied as an interpretive model, demonstrates that the reception of Wüster's contribution to terminology has influenced the development of the academic field and that terminology is now perceived as a research programme. The main conclusion is that terminology has undergone substantial changes leading, in Lakatos' terms, to a stronger theoretical and descriptive discipline.

Keywords: Eugen Wüster, terminology, reception, terminology approaches, general theory of terminology, standardization.

Résumé

L'objectif principal de cette thèse est d'explorer et d'analyser la réception de l'œuvre d'Eugen Wüster afin d'expliquer comment ses travaux ont influencé le développement disciplinaire de la terminologie. Du point de vue historique, les travaux de Wüster, en particulier la Théorie générale de la terminologie, ont stimulé la recherche en terminologie. Malgré des opinions divergentes, on s'entend pour reconnaître que les travaux de Wüster constituent la pierre angulaire de la terminologie moderne.

Notre recherche vise spécifiquement à explorer la réception de l'œuvre wüsterienne en étudiant les écrits relatifs à cette œuvre dans la littérature universitaire en anglais, en espagnol et en français entre 1979 et 2009, en Europe et en Amérique. Réalisée dans le cadre du débat sur la réception de l'œuvre de Wüster, cette étude se concentre exclusivement sur l'analyse des critiques et des commentaires de son œuvre. Pour ce faire, nous avons tenu compte de la production intellectuelle de Wüster, de sa réception positive ou négative, des nouvelles approches théoriques en terminologie ainsi que des études portant sur l'état de la question en terminologie entre 1979 et 2009. Au moyen d'une recherche qualitative de type exploratoire, nous avons analysé un corpus de textes dans lesquels les auteurs : a. ont cité textuellement au moins un extrait d'un texte écrit par Wüster ; b. ont référé aux travaux de Wüster dans la bibliographie de l'article ; ou c. ont fait un commentaire sur ces travaux. De cette manière, nous avons cerné les grandes lignes du débat autour de la réception de son œuvre.

Les résultats de notre étude sont éloquents. Ils offrent une idée claire de la réception des travaux de Wüster dans la communauté scientifique. Premièrement, Wüster représente une figure centrale de la terminologie moderne en ce qui concerne la normalisation terminologique. Il fut le premier à proposer une théorie de la terminologie. Deuxièmement, la contextualisation appropriée de son œuvre constitue un point de départ essentiel pour une appréciation éclairée et juste de sa contribution à l'évolution de la discipline. Troisièmement, les résultats de notre recherche dévoilent comment les nouvelles approches théoriques de la terminologie se sont adaptées aux progrès scientifiques et techniques. Quatrièmement, une étude menée sur 166 articles publiés dans des revues savantes confirme que l'œuvre de Wüster a provoqué des réactions variées tant en Europe qu'en Amérique et que sa réception est plutôt positive. Les

résultats de notre étude font état d'une tendance qu'ont les auteurs de critiquer les travaux de Wüster avec lesquels, dans la plupart des cas, ils ne semblent cependant pas être bien familiarisés.

La « méthodologie des programmes de recherche scientifique », proposée par Lakatos (1978) et appliquée comme un modèle interprétatif, nous a permis de démontrer que Wüster a joué un rôle décisif dans le développement de la terminologie comme discipline et que la terminologie peut être perçue comme un programme de recherche scientifique. La conclusion principale de notre thèse est que la terminologie a vécu des changements considérables et progressifs qui l'ont aidée à devenir, en termes lakatosiens, une discipline forte tant au plan théorique que descriptif.

Mots-clés : Eugen Wüster, terminologie, réception, approches terminologiques, Théorie générale de la terminologie, normalisation

Table of Contents

List of Abbreviations

The following list describes the meaning of the abbreviations and acronyms used throughout this dissertation.

Abbreviation	Meaning
ACA	Author Co-Citation Analysis
AFNOR	Association Française de Normalisation
Afterm	Association Francaise de Terminologie French Association of Terminology
AILA	Association Internationale de Linguistique Appliquée
APA	American Psychological Association
ASTM	American Society for Testing and Materials
A&HCI	Arts & Humanities Citation Index
CNRS	Centre National de la Recherche Scientifique
COLTERM	Red Colombiana de Terminología Colombian terminology network
CRIM	Centre de Recherche en Ingénierie Multilingue
CVC	Centrum voor Vaktaal en Communicatie
DGTD	General directorate for Terminology and Documentation
DIN	German standard - Deutsches Institut für Normung
ECE	Economic Commission for Europe
EHR	Electronic Health Records
EURODICAUTOM	Multilingual term bank of the European Commission
FIT	Fédération Internationale des Traducteurs International Federation of Translators

GDT	Le grand dictionnaire terminologique
GIRSTERM	Groupe interdisciplinaire de recherche scientifique et appliquée en terminologie
GIT	Grupo de Investigación Terminológica (Venezuela)
GTT	General theory of terminology
Hispanoterm	Centro de Terminología Científica y Técnica del Español
IATE	Inter-Active Terminology for Europe
IEC	International Electrotechnical Commission
IEM	International Esperanto Museum
IEV	International Electrotechnical Vocabulary
INALCO	Institut National des Langues et Civilisations Orientales
Infoterm	International Information Centre for Terminology
ISA	International Federation of the National Standardizing Associations
ISO	International Organization for Standardization
ISO/R	International Organization for Standardization - Recommendation
ISO/TC37	International Organization for Standardization/Technical Committee 37
IULA	Institut Universitari de Lingüística Aplicada
LEXIS	Lexical Information System (Term Bank)
LGP	Language for General Purposes
LLACAN	Langage, Langues et Cultures d'Afrique Noire
LLBA	Linguistics and Language Behavior Abstracts

LSP	Language for Specific Purposes
MLA	Modern Language Association International Bibliography
NLP	Natural Language Processing
ÖGDB - ÖGDI	Österreichische Gesellschaft für Dokumentation und Bibliographie Austrian Society for Documentation and Bibliography
OLF	Office de la langue française
OLST	Observatoire de linguistique Sens-Texte
ÖNA	Österreichischer Normenausschuß Austrian Standards Institute
OQLF	Office québécois de la langue française
RITerm	Red Iberoameriana de Terminología
PARATERM	Comisión Paraguaya de Terminología
SNOMED	Systematized Nomenclature of Medicine-Clinical Terms
SSCI	Social Sciences Citation Index
TC/SC	Technical committee / Scientific Committee (ISO)
TEAM	Terminology data bank system developed by SIEMENS
TERMCAT	Centro de Terminología de la Lengua Catalana
TERMAR	Grupo Argentino de Terminología
TERMIUM	Government of Canada's terminology and linguistic data bank Banque de données terminologiques et linguistiques du gouvernement du Canada
TGT	Théorie générale de la terminologie
TIA	Terminologie et Intelligence Artificielle
TKB	Terminological knowledge bases

TU	Terminological unit
UDC	Universal Decimal Classification
UN	United Nations
UNECE	United Nations, Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNISIST	Universal System for Information in Science and Technology
URUTERM	Grupo de Terminología de Uruguay
UU	Unit of understanding
VenTerm	Asociación Venezolana de Terminología
WWW	World Wide Web

List of Tables

List of Figures

Acknowledgments

Writing this doctoral dissertation was an intense labor of love and my gratitude is extended to many individuals for their help, which has made this journey thoughtful and rewarding.

My highest gratitude goes to my supervisors, Madame Monique C. Cormier, Professeure titulaire et Directrice du Département de linguistique et de traduction de l'Université de Montréal, and Monsieur John Humbley, Professeur titulaire du l'UFR-Études Interculturelles de Langues Appliquées (EILA) de l'Université Paris Diderot. Both supervised this dissertation with a thoughtfulness and generosity that exceeded any reasonable standards. I will be forever thankful to them, not only for the many ways they contributed to this project, but also for the many ways they supported me. Their calm demeanors and extreme patience made for a good working relationship.

Madame Cormier has always gone above and beyond her academic duty. I thank her for providing such a stimulating and peaceful research environment and for her consistent encouragement and support. The journey has been more peaceful because of her patience; I cannot imagine this dissertation being possible without her serenity and her confidence in what I could do.

Monsieur Humbley provided needed encouragement and insights. I thank him for his prompt readings, for his valuable suggestions and concise comments. I would also like to recognize his kindness, his dedication as well as the expert guidance and academic input with which he provided me throughout this long project.

I also wish to extend my thanks to the members of the examining committee for their expert knowledge and their willingness to read this dissertation.

I would also like to acknowledge the academic, financial and technical support of the Département de linguistique et de traduction and its staff, particularly in the awarding of the Bourse d'excellence académique that provided me, for three years, the necessary financial support for this research. I am also thankful to Sandra Thibaudeau and Douglas Rideout who revised this dissertation on such short notice.

Introduction

The main objective of this study is to explore and analyze the reception of Eugen Wüster's work with the goal of explaining the development of terminology as a discipline. Today, more than thirty years after Eugen Wüster's death, his legacy remains a milestone in the field of terminology. In the history of terminology, the majority of research studies have dealt, in one way or another, with Wüster's work, particularly his general theory of terminology. This study is guided by the following question: "How has the reception of Eugen Wüster's work influenced the development of terminology as a discipline?" Our specific undertaking is to discover the answer within the context of modern terminology by studying what has been said about Wüster's work in English, French and Spanish between 1979 and 2009, both in Europe and the Americas. The study focuses on analyzing the responses and comments to Wüster's work; work which still plays an important role in terminology research.

In this introduction, a roadmap through the various aspects of the research process, which serve as the background for the chapters to follow, is provided. It gives a brief overview of the background of the study and states the general aim as well as the specific objectives. This is followed by the definitions of some key terms and the scope (delimitations and limitations). It also provides the theoretical framework used to interpret the results, the research methodology and the importance of the study. The final section outlines the structure of this dissertation.

Background of the Study

Modern terminology has its roots in Austria in the 1930s with the work of the Austrian engineer Eugen Wüster. Two bibliographies, collected by A. Lang, F. Lang, and R. Reiter (1979) and Felber (1998) respectively, show over 500 major and minor works published by Wüster alone. The scope of Wüster's publications gives an idea of his widespread contribution to terminology and of his competence in related fields of study. His work has been received both positively and negatively. Though his impact has been wide-ranging and conclusive, in the last two decades there has been a growing interest in re-examining Wüster's contribution to

terminology. For example, the debate around the negative reception of Wüster's work gave birth to new theoretical approaches to terminology which gained momentum in the early 1990s. This can be observed in the publication of negative critical articles, such as those by François Gaudin (1993a, 1993c), Monique Slodzian (1993, 1995), Rita Temmerman (1997a, 1998, 2000a), Didier Bourigault and Monique Slodzian (1998/1999), and María Teresa Cabré (1999c, 2003a) to mention just a few. Likewise, new theoretical approaches have been proposed that create niches for more specific theories of terminology, for instance François Gaudin (1993b, 2003) and María Teresa Cabré (2000b, 2002c). Another approach suggests a new conceptual framework in contradistinction to the one developed by Wüster such as Rita Temmerman (2000b).

The negative reception of Wüster's work, followed by the proposition of new theoretical approaches to terminology, has drawn replies from Wüster's followers in the terminology community. These reactions to the negative reception of Wüster's work clearly show its defense and positive reception. For example, the 13th European Symposium on Languages for Special Purposes (2001) concentrated on analyzing the state of the art of terminology by determining first, in which respects fundamental theoretical positions had changed; second, whether those positions were completely contradictory; or third, whether they presented only superficial differences. The proceedings were published in the journal *Terminology Science & Research* Vol. 12 (2001) and Vol. 13 (2002).

Within the context of debate on the reception of Wüster's work, the following project is to be carried out (see Figure 1). The study takes into account Wüster's work and both its positive and negative reception, as well as the new theoretical approaches to terminology and the studies that have concentrated on analyzing the current state of the art of terminology. The title, *The Reception of Eugen Wüster's Work and the Development of Terminology*, covers a vast topic and that is why it is necessary to delimit the field in what follows.

Figure 1. Context of the Reception of Wüster's Work
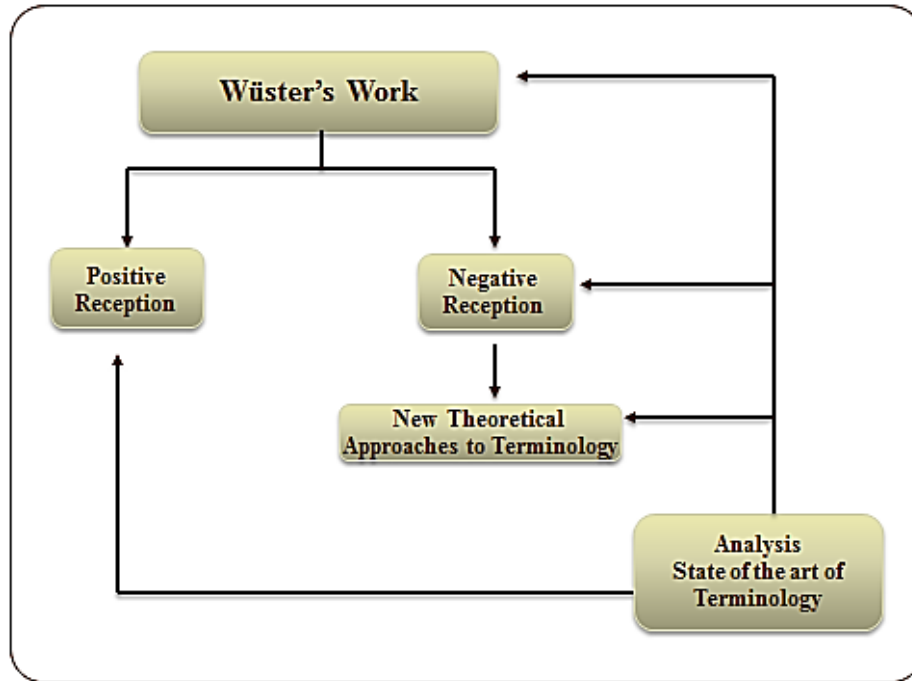
General Objective

This study aims to explore and analyze the reception of Wüster's work with the goal of explaining how both positive and negative reception of his work has influenced the development of terminology as a discipline and whether the discipline is in a progressive or degenerating state as per Lakatos' terms (the "methodology of scientific research programmes" explained in this introduction in the Theoretical Framework section). The general objective will be achieved by reviewing terminological bibliographies written in English, French, and Spanish, between 1979 and 2009, especially in Europe and the Americas, after the publication of *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (1979a) [Introduction to the General Theory of Terminology and Terminological Lexicography]. Terminological bibliographies written in German would surely contribute to a fuller understanding of the reception of Wüster's work however it will not be treated here because the author does not read German. This study aims to add new and empirical evidence to the debate surrounding the reception of Eugen Wüster's work and to explain its implications in the development of terminology.

Specific Objectives

The general objective can be broken down into five specific objectives as follows:

1. Studying Eugen Wüster and his work
2. Examining and describing the reception of Wüster's work in the literature written in English, French and Spanish between 1979 and 2009
3. Analyzing the reception of Wüster's work that appears in the documents that make specific reference to any of his works
4. Drawing conclusions from the aforementioned analysis
5. Applying the theoretical framework (reception theory and the "methodology of scientific research programmes") in order to interpret the research findings

Definition of Key Terms

Several key terms require definition. These terms will be used throughout the study as defined operationally in this section. They are listed below in alphabetical order.

Heuristic

"A powerful problem-solving machinery, which, with the help of sophisticated mathematical techniques, digests anomalies and even turns them into positive evidence" (Lakatos, 1978, p. 4).

Horizon of expectations

A term used by Hans Robert Jauss within reception theory to designate the set of cultural norms, assumptions and criteria shaping the way in which readers understand and judge a literary work at any given time.

Methodology

The branch of philosophy that analyzes the principles and procedures of inquiry in a particular discipline.

Methodology of Scientific Research Programmes

"A new demarcationist methodology (i.e. a universal definition of progress)" (Lakatos, 1978, p. 178). It is understood as an instrument for understanding patterns of thought specific to the development of science. Throughout this dissertation the British spelling used by Imre Lakatos of the term "programme" will be used.

Negative reception

Comments expressing disagreement, opposition, or criticism to Wüster's ideas.

Positive reception

Comments showing agreement with or approval of Wüster's ideas used to emphasize how important or useful they are.

Reception

The manner in which the work of an author is read and interpreted within a given community of readers.

Reception theory

A reader response theory mainly used in literary analysis in modern literary studies. It focuses on the way the work of a literary author is received by its readers.

Terminology

The academic discipline that studies the concepts and terms used in specialized languages.

Wüster's work cited

An explicit bibliographic reference to his work in the bibliography of the article as works cited that lends recognition to Wüster's publications and verifies the authenticity and the legitimacy of his ideas.

Wüster's work mentioned

A clear reference or comment to Wüster or any of his work in a written document without giving many details or citing the reference in the bibliography.

Wüster's work quoted

A verbatim phrase, sentence or extract from any of Wüster's publications, especially in order to support or prove the author's idea.

Scope of the Study

This study focuses on two specific aspects of modern terminology, namely, the reception of Wüster's contribution to terminology and the development of terminology as a discipline. As it has already been stated, the documents to be analyzed will be taken from bibliographic sources pertaining to terminology and related disciplines, such as linguistics, information science and ontology, written in English, French or Spanish after the publication of Wüster's *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (1979a) [Introduction to the General Theory of Terminology and Terminological Lexicography]. By restricting the scope of this project to these languages, to Europe and the Americas, and to the period between 1979 and 2009, this dissertation provides a wide-ranging analysis of the reception of Wüster's ideas and a broad interpretation of the development of terminology. An extensive and in-depth analysis of Wüster's work is beyond the scope of this project. Instead, this study focuses on analyzing the comments that authors have made on Wüster's work. The model used in this study does not attempt to explain or clarify Wüster's work, but rather provides the framework to explain the implications of the reception of his ideas in the development of terminology.

The delimitations of this study are those characteristics that limit its scope. In this sense, this study is chronologically restricted to a period of 30 years, that is, from 1979 to 2009. The publication of *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* in 1979 marks the posthumous reception of Wüster's work. The selection of the languages was a practical one. English and French have generated significant terminological activities carried out both in Europe and the Americas in general. Spanish has also moved

towards terminological research, although the research done in Spanish-speaking countries is fairly recent and theoretical contributions are still limited to the communicative theory of terminology proposed by Maria Teresa Cabré and the frame-based terminology proposed by Pamela Faber (see Alpízar Castillo, 1996; Pozzi, 1996).

To ensure the feasibility of the project, only the published documents that make explicit reference to Wüster's work have been considered. This is the fundamental parameter of delimitation for this study. The general corpus comprises monographs, manuscripts, congress proceedings, academic journal articles and other published documents such as textbooks, book reviews, and on-line published material. The following is a list of corpora containing the most representative texts studied:

- **Corpus 1.** Wüster's English, French and Spanish versions of *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (1979a): Wüster (1985b, 1985c, 1998) and other major contributions (see Appendices A and B).

- **Corpus 2.** Wüster's ideas continued or supported by other scholars: Antia (2001, 2002, 2003b); Arntz (1981b, 1986); Arntz and Picht (1995); D. Blanke (1998); W. Blanke (1988, 1989); Budin (1998, 2001, 2006, 2007); Bühler (1980, 1982a, 1982b, 1998); Candel (2004, 2007); Felber (1973, 1974c, 1977a, 1978b, 1980a, 1980b, 1981a, 1982b, 1983a, 1983c, 1984, 1987a, 1998); Galinski (1982b, 1998, 2009); Humbley (2004, 2007); Nedobity (1983, 1988, 1989); Nuopponen (1994a, 1994b, 1994c, 1996b); Picht (1994-1995), among others.

- **Corpus 3.** Studies negatively criticizing Wüster's work: Bourigault and Slodzian (1998/1999), Cabré (1999c, 2003a), Gambier (1987, 1991a, 2001), Gaudin (1990, 1993a, 1993c), Slodzian (1993, 1995), Zawada and Swanepoel (1994), and Temmerman (1997a, 1998, 2000a) to mention just a few.

- **Corpus 4.** New theoretical approaches to terminology that depart from the negative criticisms of Wüster's work: Bourigault and Slodzian (1998/1999); Cabré, Freixa, Lorente, and Tebé (1998), Cabré (1999c, 2000b, 2000c; 2009), Cabré and Estopá

(2003), Diki-Kidiri (2000b, 2007a, 2008a), Gaudin (1993b, 2003), Slodzian (2000), and Temmerman (1997a, 1998/1999, 2000a, 2000b, 2001), among the most recognized.

- **Corpus 5.** Among the above-mentioned documents, a sample corpus of 166 academic journal articles that illustrate the reception of Wüster's work, thus allowing for a corpus-based study (see Appendix C).

The limitations of this study set the constraints on generalizability and the effectiveness of our findings. In this sense, there are two limitations about the present study that need to be clarified and addressed. The first limitation deals with the inter-disciplinary nature of this study. The results of the study rely exclusively on the reception of Wüster's work as a measure of the development of terminology, that is, the reception of Wüster's work is studied in order to explain the development of terminology as a discipline. To do this, the theoretical framework chosen for this project has two components, one from literature and the other from philosophy. The second limitation has to do with the extent to which the findings can be generalized beyond the languages studied. The reception of Wüster's work is studied in the terminology bibliographies written in English, French or Spanish. The study does not include the analysis of German bibliography and so it is limited to showing more extensive findings in the language in which Wüster used to write. This limitation was partly overcome by taking into account the documents that make reference to Wüster's work written in German. Further empirical research in a corpus of German bibliographies, however, is needed so as to document the ways in which Wüster's work is received in German. It has been considered that these limitations should be taken into account when making generalizations based on the final results.

Theoretical Framework

The theoretical framework consists of an *a priori* component of reception theory proposed by Hans Robert Jauss (1982) and an *a posteriori* component based on the concept of "methodology of scientific research progammes" proposed by Imre Lakatos (1978). This theoretical framework is used to develop the final interpretive and explanatory section offered in chapter 5. First, reception theory serves as the basis for this study where the meaning of the work of an author is defined by its recipients who make sense of the work independently of the

author's intentions. Second, the "methodology of scientific research programmes" serves to explain how both positive and negative reception of Wüster's work has influenced the current state of terminological development. It is necessary to introduce and discuss the theoretical framework early in this introduction because it enlightens the rationale for the study, the questions and the methodology. Ultimately, the findings are discussed in terms of how they relate to the inquiry that underlies the study.

The theoretical framework proposed for this study provides, first, a means to examine the reception of Wüster's ideas and, second, a means to explain the reactions that Wüster's ideas have generated in terminology researchers. The theoretical framework assumes that reception theory and the "methodology of scientific research programmes" are the most appropriate approaches to explain the way Wüster's ideas have been interpreted by different scholars. The combination of these two components provides the theoretical framework for a productive exploratory methodology.

Reception Theory

Reception theory was developed by the members of the Constance School, a research group at the University of Constance, West Germany. The theory was a well-received change in the appraisal of works of art, where the reader or receiver is considered a historical reference. As an approach to literary criticism, it was developed during the 1960s and 1970s and relates to other similar literary approaches such as reception studies, reader theory, reader-response theory and reader-response criticism.

Hans Robert Jauss, a German theoretician and literary critic, first talked about reception theory or aesthetics of reception in 1967 at the University of Constance in a lecture entitled "Literary History as a Challenge to Literary Theory" (Jauss & Benzinger, 1970). In this lecture, he proposed treating literary history as reception history. He suggested taking into account the changing receptions of a text by different readers at different times. As Robert Holub (1984, p. 4) indicates, Jauss never used the term "reception theory" by name. However, Holub suggests that "reception theory refers throughout to a general shift in concern from the author and the work to the text and the reader" (Holub, 1984, p. xii).

Reception theory, also known as "the aesthetics of reception," is mainly used as a literary analysis in modern literary studies, focusing on the way the work of a literary author is received by its readers. It is based on history and, as a result, deals with revealing how readers interact with the work of an author over time and, "takes place in the realization of literary texts on the part of the receptive reader, the reflective critic, and the author in his continuing productivity" (Jauss, 1982, p. 21). Moreover, as it is driven by contextual factors which look at the historical events that surround the reception of a work, it places the reader in context both individually and historically. That is why "the historical context in which a literary work appears is not a factical [sic], independent series of events that exists apart from an observer" as Jauss (1982, p. 21) points out. In the reception of Wüster's work, it is important to take into consideration two elements of reception theory. First, the history of a work is strongly influenced by the background knowledge of the receivers, who during the course of time appraise it in different ways. Second, authors are also receptors of other works. Wüster was not an exception since he was a receiver of other theories that influenced his ideas, such as those of the Vienna Circle. These phenomena are analyzed as part of the history of reception. Though Wüster's work may not be analyzed as a work of literature, a quick bibliographic search shows that reception theory has already been applied with success in several disciplines such as music (Lessem, 1988), cinema (Klinger, 1989), theology (Lategan, 1991), history (Thompson, 1993) and translation studies (Lefevere, 1995), to mention just a few.

Methodology of Scientific Research Programmes

This study focuses on explaining the development of terminology as a discipline; therefore, it is important to clarify how scientific knowledge grows. One way to do this is within the context of philosophy of science. Philosophy of science has played an important role in explaining the nature and process of scientific research. It has also helped researchers provide methodological justifications for their studies. According to Imre Lakatos (1978), "philosophy of science provides normative methodologies in terms of which the historian reconstructs 'internal history' and thereby provides a rational explanation of the growth of objective knowledge" (p. 102). However, even today, philosophers of science disagree over an absolute model of the growth of scientific knowledge. One thing may be clear; the link

between philosophical and historical methods in efforts to understand the growth of scientific knowledge is stimulating. This idea inspired Lakatos who used Kant's famous dictum to link both disciplines: "Philosophy of science without history of science is empty; history of science without philosophy of science is blind" (Lakatos, 1978, p. 102). Three thinkers, Karl Popper, Thomas Khun and Imre Lakatos, are generally regarded as the most influential philosophers of science of the twentieth century. Before illustrating Lakatos' view on the growth of knowledge through his "methodology of scientific research programmes," let us look briefly at both Popper's and Kuhn's ideas on the growth of scientific knowledge.

With *Conjectures and Refutations: The Growth of Scientific Knowledge* (1963), Popper claims that science is in a constant state of revolution and that the history of science is characterized by continuous refutations. In this book, Popper demonstrates how knowledge progresses by conjectures. Popper maintains that science does not develop through hypotheses; instead, it develops through random attempts to solve problems (conjectures) and then attempts to prove them wrong (refutations). Refuting, in the sense of rejecting, old theories is the principal means of scientific discovery. A different view comes from Kuhn (1970) in *The Structure of Scientific Revolutions,* where the growth of knowledge and the history of science are especially significant for philosophy of science. It is so significant that the first sentence of *The Structure of Scientific Revolutions* reads as follows: "history, if viewed as a repository for more than anecdote or chronology, could produce a decisive transformation in the image of science by which we are now possessed" (p. 1). Kuhn's viewpoint is that the history of science is marked by periods of normal science which are then punctuated by revolutionary periods, where scientific revolutions entail revising existing scientific beliefs or practices (Kuhn, 1970, pp. 92-93).

In *The Methodology of Scientific Research Programmes,* Lakatos (1978) proposed a model that would give a coherent explanation of scientific progress consistent with historical evidence. Lakatos' explanation of progress is based on the idea of a "research programme," namely, a series of theories characterized by a hard core, a protective belt, a negative heuristic and a positive heuristic, explained in turn. In the field of philosophy of science, Lakatos is the

first to consider such a methodology, which criticizes Popper's falsificationism and incorporates Kuhn's historical approach.

The central feature of the methodology is the unit of appraisal, which is not a single theory, but essentially a series of theories. According to Lakatos (1978), the series of theories forms the "research programme" and has the following structure:

- The hard core are the features of the theory that are essential; everything that is fundamental to its existence and which distinguishes the programme from other programmes. It is "characterized by a certain continuity which connects their members" (p. 47).

- The protective belt consists of a chain of theories and assumptions that, unlike the hard core, are subject to change to simulate reality. They are the features of the programme that may expand and change according to specific needs (p. 50).

- The negative heuristic is the methodological rules that "tell us what paths of research to avoid" (p. 47). It specifies the hard core of the programme.

- The positive heuristic is the methodological rules that "tell us what paths to pursue" (p. 47). It "consists of a partially articulated set of suggestions or hits on how to change, develop the 'refutable variants' of the research programme" (p. 50).

The protective belt develops because, in its early stages, a research programme makes idealistic statements, which is one of the criticism put forth by Wüster's critics. Developing the protective belt means forming a set of theoretical suggestions in order to make the programme more realistic and progressive. First, for Popper, the most important component for appraising science is theory, while for Lakatos it is the set of theories organized around a hard core guarded by a protective belt which forms a scientific research programme. In addition, for Popper, critical experiments are important because they are the best means to falsify theories, while for Lakatos they are irrelevant because you can always make changes to a theory without affecting it. Second, Lakatos agreed with Kuhn that the correct unit of analysis in science is much broader than that of a single theory. It should be noted that, for our study, Lakatos' "research programme" is viewed as a representational model, and has been imported into the

reception of Eugen Wüster's work primarily as an interpretive approach of the growth of terminology as a research programme.

Given this conceptualization, Lakatos (1978) was able to provide a model for scientific growth by differentiating between "progressive and degenerating" programmes. Research programmes may be progressive in two ways. According to Lakatos' criteria, change is said to be theoretically progressive if ''each new theory has some excess empirical content over its predecessor'' (p. 33) and empirically progressive if ''some of this excess empirical content is also corroborated'' (p. 34). If a programme fails to display these characteristics (both the theoretical and empirical.), it is no longer progressive, but has become degenerating. In addition, as Lakatos (1978) points out, "it is very difficult to defeat a research programme supported by talented, imaginative scientists" (p. 72) as is the case presently of terminology researchers.

According to Lakatos (1978, p. 178), "the methodology of scientific research programmes is a new demarcationist methodology (i.e. a universal definition of progress)." This methodology is understood as a tool for understanding thought patterns specific to the development of science. As proposed in Lakatos (1970), the methodology combines the strengths of both Popper's and Kuhn's positions, while giving a rational account of scientific growth. In this regard, Lakatos rejects the idea that isolated theories are the appropriate units of appraisal. He proposes that the best way to appraise progress is by assessing clusters of interrelated theories or scientific research programmes. Lakatos' methodology has a very practical feature and it is the claim that single theories cannot be appraised literally. "What we appraise is a series of theories rather than isolated theories" (Lakatos, 1978, p. 33). He insists on testing theories and appraising research programmes because "one can understand very little of the growth of science when our paradigm of a chunk of scientific knowledge is an isolated theory […] standing aloof, without being embedded in major research programme" (Lakatos, 1978, p. 87).

Although Lakatos' "methodology of scientific research programmes" was originally used to explain progress in physics and mathematics, and "was criticized both by Feyerabend and Kuhn" (Lakatos, 1978, p. 116), it has been widely useful for interpreting research in

science education (Niaz, 1993) and in psychology (Niaz, 1998). The Lakatosian framework not only solved certain philosophical problems, but also provided, to our knowledge, a vehicle for analyzing the structure of some subject fields such as economics (Blaug, 1975), biogeography (Craw & Weston, 1984), biology (Dressino & Denegri, 1996), administration (Tixier & Jeanjean, 2000), literary tradition (Black, 2003), and parasitology (Cabaret & Denegri, 2008), among others. The methodology has proved fruitful for many disciplines because, as Lakatos (1978, p. 115) suggests, "research programmes being public property, many people work on them in different corners of the world." Similarly, scholars develop, what Castro-Prieto & Olvera-Lobo (2007) call, social networks in terminology. They refer to nodes, made up of scholars who share common interests (hard core of the programme) and knowledge in the terminology field where "the members of such series of theories are usually connected by a remarkable continuity which welds them into research programmes" (Lakatos, 1978, p. 47), that is, the terminology research programme.

Using the Lakatosian framework, we are able to explain the progress terminology has made and to interpret the structure of terminology as a research programme. Popper seems too strict in his standards of falsifying a theory because of the birth of a new one. On the other hand, Kuhn's model is imprecise due to its vagueness around the idea of progress through revolutions. Lakatos' model is more adequate and applicable. Given the limitations of Popper and Kuhn to explain the structure of terminology, Lakatos' "scientific research programme" fits terminology well (see chapter 5).

Research Methodology

A decision has been made to use qualitative methods, specifically document and content analysis, in order to become familiar with the reception of Wüster's work and achieve new insights. The research process follows an exploratory method that studies texts where authors make comments on Wüster's work. It also falls into descriptive research studies as it portrays accurately the characteristics of the debate around the reception of Wüster's work, a situation that needs explanation. The explanation is possible by interpreting the findings within the theoretical framework chosen and by showing the importance of the reception of Wüster's

work in understanding the development of terminology as a discipline. In this sense, the methodology is determined by the scope of the project, the general aim and the specific objectives (see Figure 2). Background reading and the literature review is an on-going process and the research goes hand in hand with the sequence of chapters.

As Figure 2 displays, the research process starts with the identification of a problem, that is, the debate around the reception of Wüster's work. Based on this debate, we have set up a research question and have formulated the general objective and the specific objectives. These specific objectives are closely linked to research methodology and in turn guide the stages of the research.

Figure 2. Research Project Structure
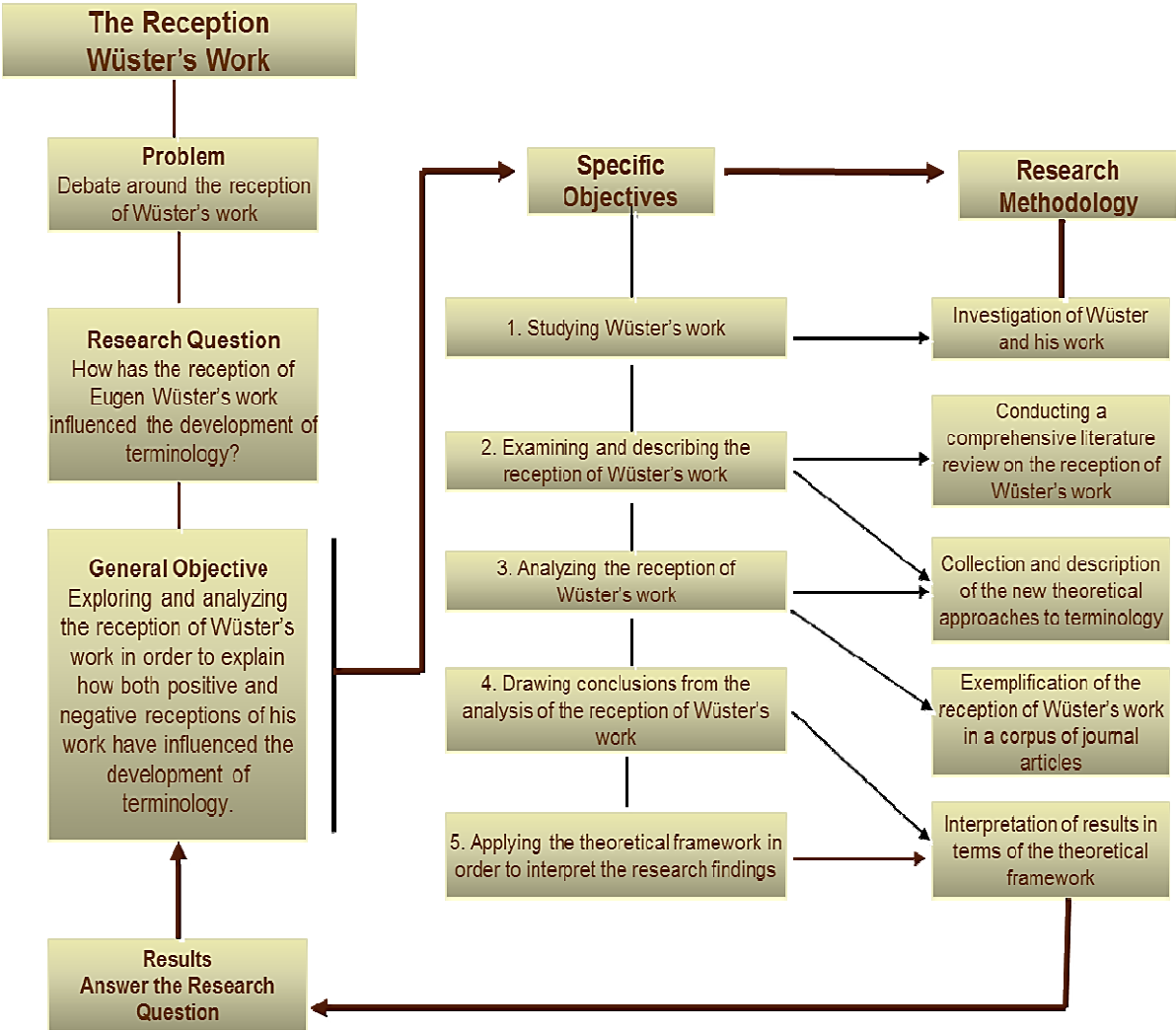
Thus, the methodology adopted consists of the following stages:

1. Investigation of Eugen Wüster and his work. His work is collected in the form of publications in English, French and Spanish. Research on this topic is presented in chapter 1 and documented according to corpus 1.

2. A detailed and comprehensive literature review of the reception of Wüster's work in a corpus of English, French and Spanish documents. Research on this topic is presented in chapter 2 and documented according to corpus 2 and corpus 3.

3. Selection and description of new theoretical approaches to terminology. The selection is done based on the literature review and on the statement that new theoretical approaches to terminology are born from the negative reception of Wüster's work. The approaches are presented in chapter 3 and documented according to corpus 4.

4. Exemplification of the reception of Wüster's work in a sample of documents that constitute a corpus of academic journal articles. This corpus-based study carried out in chapter 4 has its own methodology. The data taken from corpus 5 is collated, described and analyzed. The description of this sample study and its findings can be found in chapter 4.

5. Interpretation of results within the theoretical framework. These results are analyzed within the theoretical framework of reception theory and the "methodology of scientific research programmes." Research on this topic is display in chapter 5.

Significance of the Study

The relevance of this study comes from (i) its goal of analyzing the reception of Wüster's work in order to explain its implications in the development of terminology and (ii) the importance of the findings. First, the study sheds light on the current reception of Wüster's ideas. It responds to comments by Antia's (2001, p. 75), Myking's (2001b, p. 56) and Humbley's (2004, p. 49) on whether researchers still rely upon indirect or secondary sources such as translations of Wüster's work or on the interpretations of other researchers. Moreover, it provides empirical evidence of the influence of the reception of Wüster's work. Because

reception includes negotiating interests between an adopted philosophy and a new one, the results add to the already existing literature on the analysis of the current state of terminology. The analysis is done by examining how the debate around the reception of Wüster's work is organized, taking into consideration the horizon of expectations of Wüster's readers. Second, based on the first contribution, this study promotes understanding of the current debate. The application of the theoretical framework to help interpret the results guides the explanation of how both positive and negative reception to Wüster's work has influenced the development of terminology. The theoretical framework also examines the relationship between reception and development through the concept of criticism. By so doing, we specifically attempt to promote reflection on the way terminology has developed and continues to develop. Finally, we wish to lay the foundation for future research on the reception of Wüster's work by suggesting studies on its reception in German. Avenues for future research are discussed in the general conclusion.

Dissertation Structure

This dissertation has five chapters with each chapter covering one of the five specific objectives. This introduction provides an overview of this dissertation. It presents the research process, as well as the theoretical framework that will be followed. The approach of the first three chapters is primarily narrative and descriptive. Chapter 4 exemplifies the reception of Wüster's work in a corpus of 166 academic journal articles within an exploratory approach. Chapter 5 follows an interpretive approach aiming at explaining and understanding the current debate around the reception of Wüster's work in the current state of the development of terminology. These chapters are outlined in turn.

The first chapter concentrates on the life and work of Eugen Wüster. It contextualizes his life and work by describing the social, academic and historical events that influenced his curiosity of linguistic issues and that marked his academic career. It also describes Wüster's many faces and outlines the content of some of his most important works.

The second chapter provides an overview of the reception of Wüster's work by presenting an exhaustive literature review. This relatively concise, yet fairly thorough overview

identifies four chronological periods in the reception Wüster's work starting in 1930 and ending in 2009. Each period highlights the most important characteristics that are often discussed among terminology researchers.

The third chapter introduces and summarizes the five main theoretical approaches to terminology. The decision to include these new theoretical approaches to terminology was made based on the contents and results of chapter 2. These approaches are the result of many years of terminology research, focusing on fixing specific terminology and linguistic problems and taking into account the negative reception of Wüster's work. They are: sociolinguistic, communicative, sociocognitive, cultural, and textual. These approaches, all in one place, facilitate and contribute to the understanding of how each approach has criticized Wüster's work.

The fourth chapter discusses the reception of Wüster's work in a corpus of 166 academic journal articles. As a sample corpus-based study, it provides its own description, methodology and data analysis. The analysis takes a close look at the critical reception of Wüster's work by discussing various characteristics of its reception and examines it by differentiating positive and negative criticisms. The results are presented first geographically, then by language and finally by topics of criticism. The chapter ends by showing the extent to which Wüster's work has been quoted, cited and mentioned.

The fifth and final chapter concentrates on interpreting, not only the results of the whole dissertation project, but the results drawn from the sample corpus-based study described in chapter 4. The chapter includes a summary of the results by answering some guided questions and an explanation of the current debate around the reception of Wüster's work. This is done by applying the concept of "horizon of expectations" of reception theory and "the methodology of scientific research programmes." In this way, chapter 5 discusses the key findings of the study and reveals the indispensable role that the reception of Wüster's work has played and continues to play in shaping the development of terminology as a discipline, which is understood in Lakatosian terms as a research programme.

Once the reception of Wüster's work has been studied, the conclusion summarizes the research and the main findings, and focuses on the contributions the study makes for future

research. The bibliography section contains the works cited and follows the American Psychological Association (APA) style guidelines. Moreover, four appendices complement this dissertation. Appendix A lists Wüster's works and their translations into English, French and Spanish. The German originals are listed for reference and translation purposes. Appendix B is an annotated bibliography of Wüster's work that includes descriptive comments on Wüster's publications. Appendix C displays the corpus of journal articles used in chapter 4. This corpus is of interest to researchers seeking to expand their knowledge of the reception of Wüster's work.

This dissertation is enlightening for those readers aiming to know the reception of Wüster's work and to understand how it has influenced the development of terminology. This dissertation does not contain a critical evaluation of Eugen Wüster's ideas or a focused discussion explaining his work. Finally, neither chapter gives reason to modify any of Eugen Wüster's personal ideas, but taken collectively they reveal much about the complex process in which his reputation was established in the field of terminology.

Chapter 1

Eugen Wüster: More than Meets the Eye

By the end of the 1970s, Eugen Wüster's ideas had filtered through European and American research on terminological topics. The reception of Wüster's work after 1979 has been both broad and multifaceted, thus making a comprehensive and an exhaustive study of its reception a very difficult task. Nevertheless, it is constructive to identify and to place into proper focus a variety of historical, political, economic, intellectual and geographical considerations that have made Wüster and his work so significant. The value of Wüster's work is important in that it has contributed to the birth of modern terminology in a very specific historical context.

The challenge of the present chapter is to sketch out the contextualization of Wüster's life and work within the field of terminology. Our main objective is to present Eugen Wüster, the Austrian engineer who founded modern terminology and established the former Vienna School of Terminology, and whose legacy remains a milestone in the field of terminology. The scope of this chapter provides a detailed presentation of the person and his individual achievements. In this sense, we shall seek to provide the first steps in the main developments of terminology and trends in the theory of terminology. The study is approached from a historical perspective and takes into account the historical events that shaped Wüster's ideas.

The structure of the overview, especially for the benefit of those readers who are less familiar with the life and work of Wüster, will be divided into three sections. First, a historical contextualization of Wüster's work will be given. Second, an exhaustive review of the biographical literature will be continued. We have discovered that authors, such as Lurquin (1979), Kingscott (1998), and F. Lang (1998), in compiling Wüster's biography, are indebted to those who had the opportunity to meet Wüster personally and to the assistance of a number of other people. It is also vitally important to mention specifically Helmut Felber (Eugen Wüster's long-time colleague), Christian Galinski (director of the International Information Centre for Terminology - Infoterm), Dr. Herbert Mayer (director of the International Esperanto

Museum - IEM in Vienna) and Thiele Wüster (Eugen Wüster's son). Third, we will focus on a brief review of Wüster's major work during his creative period in order to finish with a concise examination of his greatest achievement: his general theory of terminology. Reference will be made mainly to Wüster's major publications such his doctoral dissertation (1931), *The Machine Tool* dictionary (1968b), *The Road to Infoterm* (1974a), the article on the general theory of terminology (1974b) and the posthumous publication of the general theory of terminology (1979a). In this first chapter, we hope to give the readers, before going into the details of the reception of Wüster's work, an idea of why he worked the way he did.

1.1　Contextualization of Eugen Wüster's Life and Work

Eugen Wüster's life and work was influenced by a series of historical and intellectual events that played an important role in his productive terminological world. Although we will not seek to give an exhaustive description of all possible historical events, we will attempt to contextualize Wüster's life and work within a rich period characterized by the quest for unambiguous international communication. The contextualization will specifically cover Wüster's lifespan: from 1898 to 1977(see Figure 3). His lifetime was punctuated by three principal events. First, there were the two World Wars which saw the emergence of the international neutral language, Esperanto. It was created in 1887 and has its roots in Europe. Second, there were the Vienna Circle meetings on the philosophy of science and epistemology that began as early as 1907. Finally, there was the United Nations, started in 1945, and its Educational, Scientific and Cultural Organization (UNESCO), which aimed for international understanding and peace.

By placing Wüster in his particular historical environment, we will have a better understanding of his ideas. The purpose for the contextualization of his life and work is threefold. The first is to provide the historical framework that influenced Wüster's professional background and orientation. The second is to offer the reader a brief description of the three specific events that guided Wüster's contribution to terminology science, i.e. Esperanto, the Vienna Circle and UNESCO. The last is to highlight the relationship between these historical events and his work.

Figure 3. Contextualization of Wüster's Life and Work

1870	1898	1907	1912	1914	1918	1920	1936	1939	1945	1977	2000	…

Eugen Wüster

Esperanto

Vienna Circle

World War I

Vienna Circle

World War II

UN

Unesco
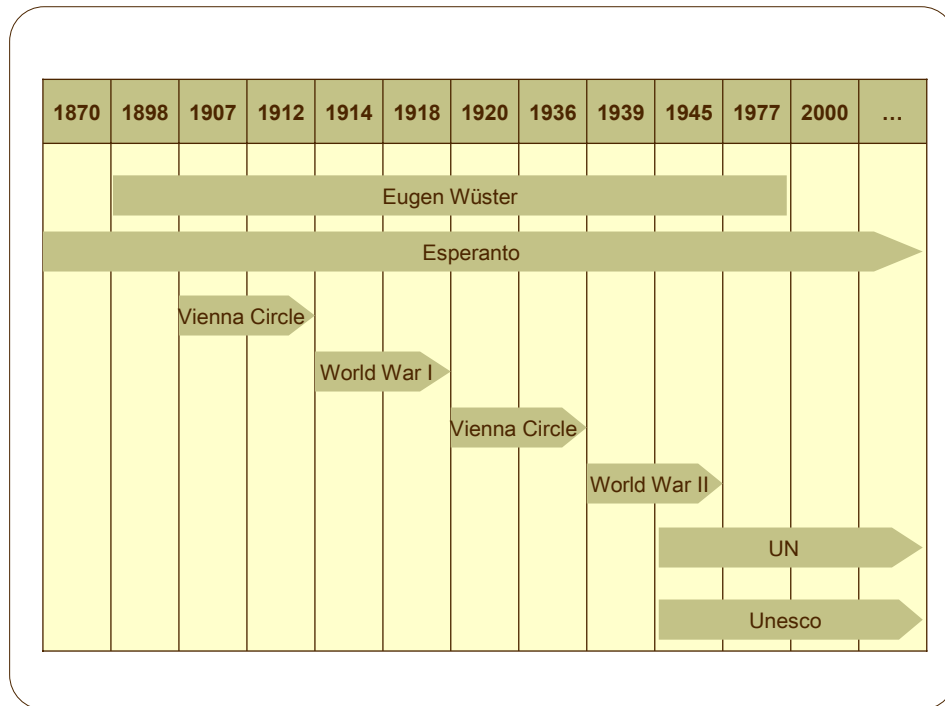
1.1.1 The Esperanto Movement

In the late 1870s, the Russian ophthalmologist Ludovic Lazarus Zamenhof developed Esperanto, a constructed international auxiliary language. Dr. Zamenhof thought that Esperanto would promote understanding between people from linguistically diverse countries. His idea was to create a simple, flexible language that could work as a universal second language (see Tonkin, 1993, pp. 9-10). The vocabulary of Esperanto is based on word roots common to many European languages and a standardized system of inflection. Although Esperanto has not yet lived up to the expectations of its creator, that of becoming a universal second language (one of the most salient criticisms leveled at it today), it is considered the most widely spoken constructed international auxiliary language in the world.

Interlinguistics is another notion that is closely related to Esperanto and to "*international planned languages* (also called *international auxiliary languages, international artificial languages, universal languages*). These are languages consciously created for (at least in most cases) the facilitation of international communication" (D. Blanke, 2007, pp.

Introduction section, ¶1). Through Esperanto, Dr. Zamenhof wanted to promote peace and international understanding. For Wüster, both Esperanto and terminology served this same purpose. The role of Esperanto, as a planned language, in Wüster's work on terminology is clearly seen in his *Enciklopedia Vortaro Esperanta-Germana* (1923-1929), his doctoral dissertation *Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik* (1931), and the project of an international key to terminology. Detlev Blanke, an active German Esperanto philologist, has intensively studied Wüster's work on Esperanto, international terminology and international standardization (see D. Blanke, 1998, 2003a, 2003b).

As a planned language, Esperanto is related to specialized technical languages and to terminology standardization. Its roots and its fruit are found in the study of international scientific communication. Indeed, the special usage of Esperanto started with short popular science texts in astronomy, biology, mathematics, medicine and other fields, as indicated by D. Blanke (1998). In 1924, several scholars, members of the French Academy of Sciences, declared that the adoption of Esperanto was a means of scientific communication due to its suitability for technical communication, as acknowledged by Janton and Tonkin (1993, p. 82). In fact, the use of Esperanto in the various sciences enriched its vocabulary with many scientific terms.

Today Wüster is well-known among Esperantists. There is a biographical entry on Eugen Wüster in the 1933–1934 *Enciklopedio de Esperanto [Encyclopedia of Esperanto]*. The encyclopedia was intended to cover all Esperanto topics, but it was never published. A present adaptation of the encyclopedia might be Vikipedio (Esperanto Language Wikipedia) where there is an entry for Eugen Wüster (Kökény & V, 1933, p. W).

It should be pointed out that the Esperanto movement had a powerful influence on Wüster's ideas as a means of international communication. In the same way, Wüster's contribution to the development of Esperanto is acknowledged by Esperantists.

1.1.2 The Vienna Circle

The Vienna Circle was one of the most important philosophical movements of the twentieth century. Along with its epistemological origins was the concept of scientific language (see Stadler, 2003). This concept was a discussion between ideal and normal language that influenced Wüster's ideas. Among the members of the Vienna Circle, as indicated in the Vienna Circle Manifesto (Neurath, Hahn, & Carnap, 1996, p. 340), were the mathematician Hans Hahn, the physicist Philipp Frank, the social scientist Otto Neurath, the philosopher Viktor Kraft, the philosopher and logician Rudolf Carnap and the physicist Moritz Schlick, who is also remembered as the leader of the Vienna Circle. The group met regularly in Vienna between 1920s and 1930s. However, the group also had meetings before World War I when it was called the Schlick Circle (see Stadler, 1998).

The members of the Vienna Circle were concerned with the logic of science and the elaboration of a common language to all the sciences. In 1929, they made their first public presence with the publication of the Vienna Circle Manifesto: *Wissenschaftliche Weltauffassung* (The Scientific Conception of the World). Their philosophy was closely related to empiricism in the sense that there is knowledge gained only from experience and logic, and that science is characterized by the application of a logical method of analysis. The tenets of the *Scientific Conception of the World* had an enormous influence on Western philosophy where philosophical discussions gave birth to the modern school of philosophy called logical positivism, also known as logical or scientific empiricism. In this sense, as stated by Ray (2000, p. 243), "logical positivism and the Vienna Circle are almost synonymous, … logical positivism emerged quite naturally from the philosophical preoccupations and scientific bias of the Vienna Circle." Logical positivists tried to bring two premises into philosophy: First, that the only source of knowledge is experience and second, that through logic one could solve any philosophical problem.

For the purpose of the contextualization of Wüster's work, we will highlight the significance of logical positivism for the philosophy of language. Logical positivists try to clarify the language of science by showing that science could be expressed through the language of logic and mathematics. From this observation follows the idea of a unified science

where all sciences share the same language, laws and method. It is the same search for precision and accuracy, as well as for a neutral language that reduces the problems of ambiguity in ordinary language. This view of philosophy as a critique of language carries the idea that an accurate usage of the scientific language is a prerequisite for all philosophical problems. In fact, univocity, precision and coherence were, after all, the common values of European philosophy concerning scientific language. These same values can be seen in Wüster's ideas.

Although terminology studies in the German-speaking world developed in the late seventeenth century (see Budin, 2006), in Wüster's work one can find several ideas that are closely related to the philosophy of language expressed in the Vienna Circle postulates. At the time of the Vienna Circle (1920-1930), Budin (2006, p. 93) points out that normative theories of language were popular, planned languages such as Esperanto found favor and scientists, linguists and philosophers tried to solve worldwide communication problems by encouraging the use of a universal language. The ideas of Rudolf Carnap and Ludwig Wittgenstein, for example, became part of the basis for twentieth century linguistics. Carnap was interested in the analysis of scientific language and in the possibility of an international language such as Esperanto (a potential vehicle for international understanding). Carnap also asserted the need to study philosophical issues in artificial languages because he had the idea that ordinary general language was too ambiguous to express the topics of science. Carnap additionally "stressed the importance of logically consistent scientific concepts as the basis of all sciences" (Budin, 2006, p. 93).

According to Budin, "Wüster's systematic approach to terminology has essentially the same fundamental questions as philosophy has had for centuries: What is reality and how can we grasp it? What are objects in reality and how can we observe them? How can we communicate about reality? How can we name objects?" (Budin, 2006, p. 95). Both Wüster and Logical Positivism grew up in a European philosophy context where philosophy was understood as a language-oriented activity. A view that was adopted by Wüster and that focuses on the conception of science as a concept system and the Vienna Circle ideal's goal: unambiguous communication and an exact language of science.

Wüster's ideas have given rise to debate due to the influence of the Vienna Circle. Scholarly literature, both critical and supportive, has developed from examination of the philosophical foundations of Wüster's terminology studies. Nedobity (1988), for example, gives a positive and detailed account of the influence of the Vienna Circle's philosophical views on Wüster's language criticism. In a word, for the Vienna Circle, the language of mathematics, physics and mechanics was a rich topic for reflecting on the limits of common language to express specialized knowledge. We can see traces of Wüster in this type of thinking, especially from his article "The Wording of the World Presented Graphically and Terminologically" (Wüster, 2003a). In fact, "Wüster, entre autres, fonda au début sa théorie sur la langue de l'électrotechnique" (Nedobity, 1988, pp. 401-402). Nedobity also adds that the intentions of the Vienna Circle and those of Wüster were not so different. In general, they planned to solve language problems for specialized knowledge dissemination. In Wüster's case, his theory is about "l'usage des langues de spécialité, que l'on ne peut épurer qu'en procédant à une mise en ordre sérieuse, autrement dit à une systématisation des notions sous-jacentes" (Nedobity, 1988, p. 406). In another article, Nedobity (1989) states that the investigation of meaning was mainly pursued by the members of the Vienna Circle and that the investigation of the relationships between concepts and their representation was the foremost activity of Wüster. Nedobity concluded that the difference lay in the approach since the Vienna Circle's approach is based on semantics while Wüster's is based on conceptology. "Wüster was primarily a conceptologist, but he had always tried to bridge the gap between philosophy, linguistics and terminology" (Nedobity, 1989, p. 26).

On the contrary, Monique Slodzian criticizes the traces of the Vienna Circle's ideas in Wüster's work. Slodzian (1993, pp. 225-226) stresses the close relation between the ideas of the *Scientific Conception of the World* and Wüster's approach to terminology. The first connection is to the concept of "unified language," the second to the theory of knowledge, the third to univocity, and the last one to the logical representation of the world. However, according to Slodzian (1993), "l'objectif de Wüster apparaît comme plus restreint que celui du Manifeste dans la mesure où il laisse la syntaxe de côté" (p. 226). For her, this idea is difficult to accept, for concepts are dependent on the context within texts; terms are not considered language independent. Slodzian (1993) also emphasizes that "le principe onomasiologique de

Wüster, et le système constitutif hiérarchique qui en découle, génèrent une démarche terminologique rigide, de type exclusivement paradigmatique" (p. 227), which presupposes a single representation of the world that is not easy to accept. Similar criticisms are expressed in Slodzian (1994/1995, 1995, 2006). We have found that the Vienna Circle's positivist tradition and Wüster's view of terminology attract similar critiques, for these critiques come from the relativist approach as opposed to the positivist approach. Relativism implies that experience, thought, reality and even criticisms and appraisals are in some way relative to something else, e.g. language and culture, among others.

The difference between general language and scientific and technical language as well as the search for common understanding among scientists were two of the main topics of study for the scholars associated with the Vienna Circle. These preoccupations were also present in Wüster's work. His collaboration with UNESCO and other international organizations allowed him to put his ideas on common understanding into practice. We will show this collaboration in turn.

1.1.3 The United Nations and UNESCO

The human mind reaches its greatest potential in times of need and hardship. From a positive point of view, both the First World War (1914-1918) and the Second World War (1939-1945) generated intense developments in many aspects of human life. Both wars led to progress in technology and science in general and to the search for international understanding. So as to ensure harmony among nations, the international community created the United Nations (UN) in 1945. The United Nations was established as an international organization committed to maintaining peace and international security, developing mutual understanding among nations and promoting social progress and better standards of living for all of human kind. Its purpose has always been cooperation in the solution to political, economic, social, cultural and humanitarian problems.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) was set up as an agency of the UN in 1945 with the goal of furthering international cooperation and understanding. It has worked to promote progress, mutual knowledge and understanding

among people. As defined in its constituting documents, the main purpose is "to contribute to peace and security by promoting collaboration among nations through education, science and culture in order to further universal respect for justice, for the rule of law and for the human rights and fundamental freedoms which are affirmed for the peoples of the world, without distinction of race, sex, language or religion, by the Charter of the United Nations" (UNESCO, 2004, p. 8).

UNESCO's approach is first and foremost educational and covers five areas: education, natural sciences, social and human sciences, culture, as well as communication and information. As an educational organization, its work is to facilitate universal access to information and knowledge, which unavoidably requires establishing standards. To collect and disseminate knowledge, UNESCO has taken the initiative to work on setting and organizing libraries, bibliographies and documentation (see Rayward, 1993). The idea of collecting and disseminating knowledge led to the creation of UNESCO's World Scientific Program for Information called Universal System for Information in Science and Technology (UNISIST) which is specifically dedicated to the dissemination of scientific information. As language was the common denominator in all these initiatives, it became evident that UNISIST should concentrate on matters related to scientific and technical communication, multilingual translation and terminological activities.

UNISIST activities at UNESCO fell initially on the shoulders of J. Edwin Holmstrom who, during the years he worked for UNESCO (1949-1958), concentrated on the promotion and dissemination of methods, norms and standards for handling information. As Holmstrom himself put it, terminology was essential for accomplishing his goal and UNESCO had to become a key player worldwide: "UNESCO ought to give a lead to the world in the promotion of measures for the overcoming of language barriers, especially as regards technical terminology" (Holmstrom, 1959, p. 1). In this same article, Holmstrom stated that language barriers could be reduced "by making translations, by increasing the proportions of scientists able to read about their own subjects in foreign languages, and by encouraging the publication of scientific literature" (p. 1) He insisted on the importance of improving terminology since "the meaning and scope of every technical term ought to be clearly associated in the minds of

every writer and every reader with one exactly defined concept and one only" (Holmstrom, 1959, p. 2).

With regard to terminology, Galinski (1999) states that "the necessity for organizing the promotion, cooperation and co-ordination in terminology only arose after the Second World War. Translators suffered from the ever increasing amount of terminology in the wake of the fast scientific and technological development" (p. 2245). When the need for terminological work became evident, those in charge at UNESCO turned to Wüster. In 1961, Wüster was elected Chairman of the Sub-Committee on Proposals for Multilingual Dictionaries (see UNESCO, 1961). In addition, as the leader of the Secretariat of Technical Committee ISO/TC 37 "Terminology (Principles and Co-ordination)", he submitted, in 1964, a ten-page document on dictionaries and glossaries outlining the actions to be taken for multilingual dictionaries (Wüster, 1964a). Later on, and because of the growing demand for international communication and cooperation, "in 1970, UNESCO on behalf of the UNISIST Programme charged Wüster (Austria), … with the preparation of two reports on the state-of-the-art of terminology. These reports were: Report 1: Inventory of Sources of Scientific and Technical Terminology; and Report 2: A Plan for Establishing an International Information Centre (Clearinghouse) for Terminology" (Galinski, 1982, p. 104). These two reports are known as *The Road to Infoterm* (see Wüster, 1974a).

According to Wüster (1974a, p. 98; 1976b, p. 34), the idea of an International Terminological Bureau had been proposed by Holmstrom for some years. In fact, there were several efforts to create a center, the main objective of which was to avoid duplication of effort. As far back as 1949, after having prepared a report on "International Scientific and Technical Dictionaries," UNESCO proposed that an "International Terminological Bureau" be founded under the common auspices of UNESCO and the International Organization for Standardization (ISO) as stated by Wüster (1974a, p. 98), (see also Galinski, 1982, p. 103; 1999, p. 2245). The idea was considered again in 1956, after the Second Congress of the Fédération Internationale des Traducteurs (FIT), when the FIT started discussing the establishment of an international center for scientific and technical terminology (Galinski, 1999, p. 2246). Finally, the proposal to coordinate terminological activities at an international

level originated with a resolution approved by the FIT in 1959 and was considered by the UNESCO Advisory Committee on Translation, Documentation and Terminology in 1961 in its first session (Jumpelt, 1963).

Soon after, UNESCO's Working Party No.3 on Scientific Translation and Terminology met in Rome in January 1964. It recommended the establishment of a permanent secretariat for the co-ordination of lexicographical and terminological activities (see UNESCO, 1964). However, it took more than seven years before Infoterm would become a reality. It was in 1969 that "the Council of Europe showed interest in the co-ordination of terminology training and contacted Eugen Wüster on that matter. In autumn 1971, Infoterm was officially founded in Vienna, Austria, by contract with UNESCO, and the Österreichischer Normenausschuß [Austrian Standards Institute] (ÖNA) put in charge of its implementation" (Infoterm, 2004, p. 5).

Within UNESCO's working groups, Wüster participated as a member of the International Advisory Committee on Bibliography, Documentation and Terminology, which was founded in September 1961. As the president of the Österreichische Gesellschaft für Dokumentation und Bibliographie [Austrian Society for Documentation and Bibliography] (ÖGDI) and as president of terminology in the Austrian Standards Institute (ÖNA) in Vienna, Austria, he attended the meetings of several working groups. Wüster's report on the establishment of such International information Centre set the stage for the creation of Infoterm.

Wüster's cooperation with UNESCO, which lasted for almost twenty years (1955-1974) (see Wüster 1955a, 1955b, 1959b, 1964a and 1974a), also had a very practical side. During the period from 1959 to 1973, Wüster worked to collect and document information on new monolingual glossaries, which were published regularly in the journals *DIN-Mitteilungen, Lebende Sprachen,* and *Babel* (Felber, 1973, p. 184) as the addenda to the UNESCO bibliography of standardized monolingual scientific and technical glossaries.

The socio-historical and intellectual context of Wüster's life played a great role in shaping his ideas. The philosophical movement associated with the need for a unified language was the intellectual counterpart to socio-historical events such as the World Wars, and had an

equally important impact upon modern terminology. The Esperanto movement, the Vienna Circle, the ISO standards and UNESCO gave Wüster the chance to become interested in electrical engineering, planned languages, language planning, information science, lexicography, terminology, education, translation and linguistics as will be seen in section 1.2. His educational background and his humanistic affinity as well as the technological environment he lived in gave him the opportunity to merge both his personal and academic interests.

1.1.4 The International Organization for Standardization (ISO)

The Industrial Revolution brought technological changes as well as an interest in the regulation of industrialization processes and the production of machine parts. This was due to the fact that machinery began to replace manual labor and to produce perfectly identical manufactured parts which could be used in similar machines and still function properly. Standards became highly important during the process of industrialization. In this sense, the demand of the Industrial Revolution was insistent on bringing about object standardization, language standardization, especially in terms of terminology and standardization of terminological principles. Linked to this idea was the regulation of terms where Wüster's work played an important role, standardizing terminological principles and methods. As Wera Blanke asserts, Wüster's interest in language standardization can be traced back to Esperanto. According to W. Blanke, the "esperantologic principles" Wüster established in his *Enciklopedia Vortaro Esperanta-Germana* (1923-1929) could just as well have been called "terminological principles" because of his preoccupations with language planning (W. Blanke, 1988, p. 189). The Esperanto project, working towards a language of international standardization, failed because of its short history, that is, at the time it did not have a sufficiently developed vocabulary of technical terms and it did not meet, in quantity and quality, the demands required for this purpose (W. Blanke, 1988, p. 184). In 1989, W. Blanke also drew attention to the pioneering importance of Eugen Wüster and Ernest Drezen in the creation and promotion of planned languages and in the development of principles of terminology standardization for the purpose of mutual understanding without ambiguities (W. Blanke, 1989, pp. 282-284). W. Blanke's comments are related to aspects that we have already

mentioned, such as Wüster's doctoral dissertation (1931), his *Enciklopedia Vortaro Esperanta-Germana* (1923-1929) and Drezen's report submitted to the 1934 ISA conference which became the inspiration for the ISO Technical Committee 37.

As some authors have indicated (Felber, Manu, & Nedobity, 1987; W. Blanke, 1988; Galinski & Hjulstad, 1998; Galinski, 2003), the first attempts to regulate international terminology in the field of technology were made in the 1880s by the International Electrical Congress, which was the predecessor of the International Electrotechnical Commission (IEC). The IEC was founded in 1906 to establish the use of certain terms for "electrical resistance" and "electromotive force" in different countries and for the preparation and publication of international standards in electrical, electronic and related technologies, today known as "electrotechnology." Its tasks were to standardize and coordinate terminology, to provide the equivalence of terms and to prepare an International Electrotechnical Vocabulary (IEV) (Krommer-Benz, Manu, & Budin, 1999, p. 2120). At that time, specialists from several disciplines realized that organizations were necessary to achieve harmonization. In this respect, Sonneveld and Loening (1988) remarked that "new terms are needed and coined constantly for new compounds, new reactions, new concepts, and new methodology" (p. 23). Sonneveld and Loening further emphasize that "terminology functions not only *predicatively*, that is, by protecting subject fields from the dangers of homonymy and synonymy, from vagueness of ambiguity, but also *descriptively*, that is, by analyzing and comparing lexemes and by establishing means for the coining of new terms" (p. 24). The regulation of terminological principles and methods arose accordingly. "The base for it were the relevant papers by engineers (for example, Duval, Kapp, Lotte, Schlomann, Wüster)" (Galinski & Nedobity, 1988, p. 8). For instance, Wüster's book *Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik* (1931) laid the foundations for the standardization of technical terminology and was the starting point for the founding of the International Federation of the National Standardizing Associations (ISA) (see Felber et al., 1987; Galinski & Nedobity, 1988), the agency primarily concerned in promoting technical terminological standardization known today as the International Organization for Standardization (ISO).

In the beginning, Wüster's doctoral dissertation (1931) was the inspiration for the founding, in 1936, of a technical committee within the ISA standards, dealing with terminology (ISA/TC37). Since the very beginning "terminological standardization has pursued two different kinds of object: the standardization of names for individual concepts on the one hand and of terminological principles on the other" (Wüster, 1955b, p. 2). Standardization activities were interrupted in 1939 because of the First World War. After the war, the ISO/TC37 changed its name. According to Wüster (1955b), the ISO

> established in 1952 a special technical committee for the international standardization of terminology, entitled ISO/TC37: Terminology (Principles and Coordination). … the most significant work actually completed in the field of international technical standardization of terminology is, however, the six-language International Electrotechnical Vocabulary prepared by the International Electrotechnical Commission (IEC) which has since become a section of ISO … the same principle has also been followed in the Vocabulary of Machine Tools, giving definitions and illustrations, now completed under the direction of E. Wüster and about to be published. (p. 3)

Wüster additionally comments on the standardization of terminological principles saying that specialists "were led to recognize the necessity for agreeing upon uniform working principles to be observed by those collaborating in it" (Wüster, 1955b, p. 4). The development of terminology has roots in the development of ISO/TC 37, which is closely linked to the name Eugen Wüster and, as we will see later, to Wüster as a terminologist and terminographer.

Eugen Wüster prepared many drafts in the preparation of ISO recommendations and standards, using analysis based on material from the Wieselburg collection. Between 1967 and 1973, the TC37 of the ISO published six ISO recommendations (ISO/R) and one ISO standard on terminology (see Felber 1973, 1976, 1978a, 1980a). The ISO/R 1087 contains the vocabulary for the theory of terminology. ISO/R 704 and ISO/R 860 deal with terminological principles. ISO/R 919 contains guidelines for terminology work. ISO/R 1149 describes methods for terminological lexicography, and ISO/R 639 and ISO/R 1951 contain symbols for languages, countries and authorities, as well as symbols to be used in vocabularies.

According to a historical report on the 65 years of standardization of terminological principles and methods (ISO/TC 37, 2004), the establishment of the technical committee passed through different development phases between 1951 and 2003. Three phases can be

distinguished. During the founding phase (1951 to 1971), Wüster's work was positively received. At this stage, ISO recommendations were being written and "the secretariat of ISO/TC37 had been taken care of by the Austrian engineer Eugen Wüster at his private international terminology centre on behalf of the Austrian Standards Institute, that phase could also be called the "Wüster Phase". It was very much governed by the strong character and convictions of Eugen Wüster" (ISO/TC 37, 2004, p. 3). Throughout the consolidation phase (1972 to 1988), the ISO recommendations continued with the aim of having them converted into International Standards. The extension phase (1989 to 2003) consists of the creation of three subcommittees: "Principles and methods," "Terminography and lexicography" and "Computer applications for terminology." As we can infer from the ISO/TC 37 (2004) report, Wüster's ideas were well received within the ISO standards and taken into account in the establishment of terminology standards. These ISO terminology standards would later become the subject of negative criticism among ontologists (e.g. Smith, 2006b).

As clearly summarized by Galinski, "in 1936, the Technical Committee ISA/TC 37 "Terminology" of the International Federation of the National Standardizing Associations (ISA) was founded. It worked until 1939. In 1951, ISO/TC 37 "Terminology (principles and coordination)" of the International Organization for Standardization (ISO) was founded. It started to operate in 1952. In February 2001, TC 37 was renamed "Terminology and other language resources" and widened its scope towards language resource management" (Galinski, 2003, p. 116). The scope of the ISO/TC 37 was extended accordingly to the standardization of principles, methods and applications relating to terminology and other language and content resources in the contexts of multilingual communication and cultural diversity. According to Galinski (2009), "Infoterm took over the Secretariat which it held until it was transferred to China at the end of 2008" (p. 19). Today the ISO/TC 37 has five subcommittees:

- TC 37/SC 1   Principles and methods
- TC 37/SC 2   Terminographical and lexicographical working methods
- TC 37/SC 3   Systems to manage terminology, knowledge and content
- TC 37/SC 4   Language resource management
- TC 37/SC 5   Translation, interpreting and related technology

1.2   Eugen Wüster's Life

Eugen Wüster's talent was especially obvious in several fields of knowledge. He was profoundly learned in the field of electrical engineering and terminology. The information about his life, in the form of a synthesis contained in this section, corresponds to the data obtained from different authors such as F. Lang (1998), Budin (1998), Kingscott (1998), D. Blanke (1998, 2003b), Holzem (1999), among others. Additional information regarding Wüster's life and work has been retrieved from the *Proceedings of the Fourth Infoterm International Conference on Professional Communication and Knowledge Transfer* edited by Erhard Oeser and Christian Galinski (1998) and published under the title *Eugen Wüster (1898-1977): Leben und Werk - Ein österreichischer Pionier der Informationsgesellschaft. His life and work - An Austrian pioneer of the information society*. In this commemorative work, six English articles explore facets of his life and work. Authors such as Friedrich Lang and Helmut Felber contributed to the biography; Erhard Oeser wrote about Wüster's influence in scientific philosophy; Heribert Picht concentrated on terminology and specialized communication; Detlev Blanke concentrated on the links between terminology science and planned languages; and finally Gerhard Budin described Wüster's archive project.

Eugen Wüster was born in the small Austrian town of Wieselburg on October 3, 1898. Very little has been written about his family. Friedrich Lang (1998), who used to work with Wüster in his office in Wieselburg, states that Wüster's father, Eugen Bernhard (1864-1951), was from an old Rhenish family and owned a farm called *"Wüste"*, next to Hückeswagen castle (not far from Remscheid, Westfalia). Wüster's mother came from a famous beer brewing family (Bartenstein) in Wieselburg. She died in 1973, at the age of 97. Wieselburger beer is still well known in Austria. F. Lang added that Wüster married Ingeborg Huber, an artist, in 1940 and became the father of a son in 1943 and of a daughter in 1947 (F. Lang, 1998, pp. 13-14).

According to Felber (1980a, p. 7), Eugen Wüster attended secondary school at the Humanistische Gymnasium in Hirschberg, a city in Lower Silesia (south-western Poland) that was a German city prior to the end of the Second World War. After finishing school, he studied electrical engineering at the Technical University of Berlin in Charlottenburg, where he

graduated in 1927. He submitted his doctoral dissertation in 1931 under the title *Internationale Sprachnormung in der Technik, besonders in der Electrotechnik* [International Standardization of Language in Engineering, Especially in Electrical Engineering] and was awarded his doctorate 'summa cum laude' from the Technical University of Stuttgart. The dissertation was later translated into Russian and was for a long time a key terminology text in Russia. Because of the impact of Wüster's doctoral dissertation in Russia, the Soviet Union proposed establishing Technical Committee 37 (TC37) within the International Organization for Standardization (ISO). The focus of this committee is the standardization of principles, methods and applications related to terminology and other language and content resources in the contexts of multilingual communication and cultural diversity.

In the same year, 1931, Wüster returned to Austria to run the Wüster family firm, Wüster & Co., which included an electrical power plant, a cold rolling mill and tool manufacturing (mainly saws and woodworking tools). In addition to managing the family firm, which he did until his death, he would later become, in 1951, its sole owner. Wüster, very soon, started to collect relevant literature on terminology from all over the world. It would become his private terminology center in Wieselburg, Austria, and part of his engineering enterprise. This compilation of reference works is known as the Wieselburg collection. In 1996, Wüster's collection became the Eugen Wüster Archive within the Science Theory Archives at the University of Vienna (see Budin, 1998).

Kingscott (1998, p. 16) also reports that Wüster received many honors, especially from his native Austria, such as the Golden Medal of Honor in 1960 for services to the Austrian Republic and the Medal of Honor for Science First Class in 1973. The Austrian association of engineers and architects awarded him their Golden Badge of Honor in 1963, the German translator's association their Golden Award in 1973, and the UK Institute of Linguistics their Diamond Jubilee Medal in 1973.

As for his personality, Felber (1980a), Galinski (1996) and Kingscott (1998) say that being reserved was one of Wüster's characteristics, which people often misunderstood as arrogance. He was also meticulous and obsessive about accuracy, other qualities that were not always appreciated. In a tribute written shortly after his death, his colleague, Helmut Felber

wrote that by "examining Wüster's method of work in more detail, one discovers a consistency in all his work: he planned everything in great detail; nothing was left to chance" (Felber, 1980a, p. 8).

Eugen Wüster died on March 29, 1977 at the age of 79. The extent of his production and the pioneering nature of much of his work as well as many of his ideas and suggestions have today still not been fully explored. Wüster was a multitasker who could work efficiency in many areas. He definitely left his footprint on many disciplines such as electrical engineering, Esperanto studies, language planning, library and information science, lexicography, terminology, terminography, standardization, teaching, translation and linguistics. See Table 1 for a briefly chronology of Wüster's life and work.

Table 1. Chronology of Wüster's Life and Work

Date	Event
1898	EW was born in Wieselburg on October 3rd.
1914	World War I began
1918	• World War I ended • EW received his school certificate from Hirschberg, Silesia
1927	EW received his electrical engineering degree at the Technical University of Berlin, Charlottenburg
1928	EW became his father's partner in the Wieselburg firm
1931	• EW became a doctor of technical sciences at the Technical University of Stuttgart • EW's doctoral dissertation *Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik* was published
1935	EW's doctoral dissertation was translated into Russian on behalf of the Soviet Academy of Sciences and became mandatory reading for students of terminology in the Soviet Union
1936	Technical Committee ISA/TC37 was created under the subject of terminology standardization
1939	World War II began
1939 to 1945	No terminology activities were developed
1945	World War II ended
1949	UNESCO proposed creating an "International Terminology Bureau"
1968	Publication of *The Machine Tool Dictionary*
1969	The UNISIST program was launched. EW was asked to submit two reports on behaf of UNESCO, today known as *The Road to Infoterm*
1955 to 1972	EW lectured on woodworking machines and tools at the Agricultural University in Vienna
1971	Infoterm was officially founded in Vienna by contract with UNESCO
1972 to 1974	EW lectured on Lexicology, Lexicography and specifically Terminology Science and Standardization at the University of Vienna
1974	• Publication of the German article "Die allgemeine Terminologielehre" • Publication of *The Road to Infoterm*
1977	EW died on March 29th, at the age of 79
1979	Posthumous publication of *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie [The General Theory of Terminology]*

1.2.1 The Engineer

Eugen Wüster was well-known in electrical and mechanical engineering circles as well as in the terminology field of these subjects. He went to Berlin to the Charlottenburg Technical University of Berlin, where he earned his electrical engineer degree in 1927. He earned his doctorate of technical sciences from the Technical University of Stuttgart in 1931. He was also a member and often president of many professional and academic organizations.

As an engineer, Wüster received professional training in pure and applied science, but he was never associated with the practical side of his profession. From what is known about Wüster's life, one could easily conclude that he was an engineer who used his scientific and engineering skills to solve both technical and communicative problems.

In the bibliography of terminology, one frequently comes across references to Wüster as the Austrian engineer who founded modern terminology. Nevertheless, whoever goes deeper into Wüster's life and work will easily find that his greatest scientific interests were mostly related to international scientific communication and common understanding. No matter how much you learn about, talk of and debate about Wüster's contribution to the development of terminology, he will always be known as the *engineer* who ventured into linguistics and language related issues.

1.2.2 The Esperantist

For an engineer, it is surprising how much of his early research was dedicated to the study of Esperanto. In fact, Wüster took an early interest in artificial languages such as Esperanto, Ido and Interlingua. From 1921 until 1931, he published papers in and about Esperanto that are still considered fundamental by Esperantists. A comprehensive bibliography of Wüster's Esperanto publications is given by A. Lang, F. Lang., and R. Reiter (1979). Wüster also collected a wide range of publications on this topic. Indeed, Christian Galinski, Infoterm director, rescued from Wüster' office in Villa Cuno information that Wüster collected on file cards on Esperanto. This material was taken to the International Esperanto Museum at the Austrian National Library, which holds most of Wüster's Esperanto and Interlingua legacy (Kingscott, 1998, p. 18). In 1933, Eugen Wüster became an honorary member of the World

Esperanto Federation, and, when he died, he was the last honorary member of this federation in the German speaking world. An important part of the books and papers (approx. 22,000 books in and about Esperanto and other planned languages) in the Vienna International Esperanto Museum (IEM) (part of the Austrian National Library) is the heritage of the Wüster library (F. Lang, 1998, p. 24). D. Blanke (1998, 2003b) and W. Blanke (1988, 1989) have contributed to important studies on Wüster's Esperanto work. Similarly, Samain (2010) has traced Wüster's path from Esperanto to terminology. In this study, Samain concluded that Esperanto has always been Wüster's window to terminology.

Wüster's underlying idea was that terminology was an essential tool for improving technical communication. Esperanto is an artificial language based as much as possible on words common to European languages; Ido, another artificial language, is a revision and a simplification of Esperanto. Interlingua, for its part, is an artificial language proposed as an international auxiliary language based on words common to English and the Romance languages. In fact, two of the chapters that Wüster submitted for his doctoral dissertation were on technical communication. Chapter 39 was on language quality and chapter 72 on international designations. In the full book edition of his 1931 doctoral dissertation, he presented a summary in German entitled *Esperanta Resumo*. Wüster also devoted chapter eight "Satzfähiges internationales Benennungssystem (internationale Sprache)" [International Naming System (International Language)] to the scientific analysis of Esperanto, its condition, application, promotion and development. From a professional perspective, he examined the question as to which language would be best suited as an international auxiliary language: Latin, English or Esperanto. He argued that Esperanto should be given preference over English, French or German. Eugen Wüster was an important interlinguist and co-founder of Esperantology (Esperanto studies). These few highlights demonstrate Wüster's role in language planning.

1.2.3 The Language Planner

Besides Esperanto, Wüster studied other artificial languages such as Volapük, Ido, Occidental, Interlingua (Latino sine flexione) and Novial. In chapter eight of his doctoral dissertation, under the title "Die anderen Plansprachen," he called these artificial languages

"plansprachen" (planned or constructed languages) and "hereby coined a new [German] term to denominate a new and further on well-recognized generic concept covering all these languages" (Felber, 1973; F. Lang, 1998). These constructed languages, artificial languages or planned languages are sometimes referred to international auxiliary languages.

Eugen Wüster was quite interested in language planning. According to him (1980), there are two distinct and independent processes that characterize language planning: the deliberate creation of language items (the linguistic aspect) and the deliberate adoption of these language items, especially standardization (the sociological aspect) (Wüster, 1980, p. 15). The type of language planning proposed by Wüster has been largely ignored, and even now, this situation has not changed much. In general, linguistics still does not accept that specialized languages for a specific subject can exist outside the models developed for ordinary languages. As a German speaker, Wüster was heavily engaged in contributing to the development of German and in modernizing and simplifying orthography, especially the use of upper case and lower case. In 1961, he was a member of the Austrian Commission that regulates German orthography, which was established by the Austrian Academy of Sciences (Felber, 1980a, p. 13). According to F. Lang (1998), Wüster "published or contributed to more than 35 articles fighting for a simplified German orthography" (p. 19). His last article appeared in 1977 (see A. Lang et al., 1979).

1.2.4 The Librarian

Eugen Wüster was a specialist in documentation. He was not trained in the information science, but he did have a background in, along with some knowledge of, the subjects he used to document. As a librarian of his time, he was an expert in the practical organization and retrieval of information. He used to select, procure, organize, preserve and make available specialized dictionaries, glossaries and terminology works, and assist people in the most efficient and effective professional ways to identify, locate and access information and resources (see Bühler, 1982a, 1998).

Helmut Felber (1980a, p. 8), who knew Wüster, agrees that he was meticulous, consistent and planned everything carefully. Essentially, as a lover of systematic ordering of all

human knowledge, he was a constant proponent of the Universal Decimal Classification (UDC) system. Wüster was an adept of the UDC system as a practical system that was easily applied to documents as well as to concepts. Both his privately owned terminology center in his hometown of Wieselburg and his *Machine Tool* dictionary provide a concrete illustration of how the UDC system works. The documents in the library at the Wieselburg offices, with a rack surface of 500 m^2, were arranged according to the UDC system (F. Lang, 1998, p. 19). Wüster also gave credit to the UDC system when reporting on *The Machine Tool* dictionary project for the Economic Commission for Europe (ECE). He understood that vocabularies have to be arranged according to an inherent logical system of the concepts, i.e. the classification of these concepts. That is why, for him, there was no other possible catalogue than the UDC tables. He was also very active in the Austrian effort to enlarge and modernize the UDC tables (F. Lang, 1998, p. 20).

Wüster was also recognized as being a bibliographer, due to his significant library in Wieselburg, experience while collecting material for his doctoral dissertation, collection of terminology bibliographies for UNESCO and practical use of the UDC system. From 1958 to 1971, Wüster was president of the Österreichische Gesellschaft für Dokumentation und Bibliographie [Austrian Society for Documentation and Bibliography] (ÖGDB) now the ÖGDI (Felber, 1973, p. 184). Another aspect of librarianship with which Wüster dealt was thesauri as he was particularly interested in working with specialized vocabularies of academic disciplines, in showing the logical and semantic relationships among terms (mainly a list of subject headings used for indexing the literature in the field). For this purpose, he adopted the ISO/TC46 "Documentation" responsible for thesaurus making standards.

In 1952, under contract with UNESCO, Wüster started to collect new information on terminological sources. His idea was to prepare an exhaustive bibliography in order to disseminate standardized glossaries and terminologies. F. Lang (1998, p. 18) states that since the rules at that time for bibliographical description used in libraries were not sufficient for this purpose, Eugen Wüster and him developed, in Wieselburg, comprehensive and easily applicable rules for entries in the *Bibliography of Monolingual Scientific and Technical Glossaries* (see Wüster, 1955a, 1959b).

Wüster was also committed to writing the section on Documentation for *Babel*, the International Journal of Translation. He did this as an addendum to the UNESCO *Bibliography of Monolingual Scientific and Technical Glossaries*. The first series of the addenda were published between 1959 and 1967 under the title "New Monolingual Glossaries." The second series was titled "New Monolingual Glossaries. Second Series" and was published between 1968 and 1973. The addenda were also published in the journals *DIN-Mitteilungen* and *Lebende Sprachen*. After this, there is no further trace of other work of this type.

As Wüster once predicted, terminology and documentation have been seen as inseparable. Both disciplines have similar views on terminology and classification systems within the information sciences. They both aim at controlling terms and concepts for information retrieval. In the beginning, documentation was strongly influenced by the ideas of logical positivism, as was terminology within the framework of an objective representation of knowledge and the use of the Universal Decimal Classification system. It was first planned to systematically organize printed documents and classify all fields of knowledge. In Wüster's view, in terminology and documentation, one should strive for clear-cut terms, representing one single concept. This observation has long been criticized from the point of view of library and information sciences because both terminology and knowledge organization are based on a diversity of social discourses.

Library and information sciences approach knowledge organization by taking into account the linguistic diversity within a given discourse community. Nowadays, classifying subject fields is a difficult task since they are multidisciplinary and are subject to evolution, which has consequences for information science. For example, Holzem criticizes the division into subject fields by saying that "la documentation partage avec la terminologie wüstérienne une même difficulté à prendre en compte la circulation interdisciplinaire des savoirs et des mots, une même croyance en l'universalité des notions, et un même désintérêt pour la fonction sociale qu'elle remplit" (Holzem, 1999, p. 5). By taking a socioterminology position, Holzem wants to redefine the relationship between terminology and documentation: "nous pourrions appeler cette redéfinition "*socio-documentation"* si ce néologisme avait un sens : en effet comment concevoir une activité documentaire qui ne relèverait pas *au départ et à l'arrivée* de

la société" (Holzem, 1999, p. 185). In this regard, it is clear that socioterminology deals with sociological aspects of terminology. Holzem's proposal goes in this same direction since she sees documentation taking the same path in order to consider sociological issues. As Thellefsen (2005, pp. 208-209) point outs, knowledge is potentially tied to the discourse community, therefore the principle of universality reflected in classification systems is problematic.

1.2.5 The Lexicographer

It was Eugen Wüster's early work on Esperanto dictionaries that stimulated his interest in lexicography. He was attracted by the lexical components of language in general and by the art of compiling, writing and editing dictionaries. That is how Wüster designed, compiled, wrote and edited the four-volume *Enciklopedia vortaro esperanta-germana* (Wüster, 1923/1929) [Encyclopedic Esperanto-German Dictionary]. "It was based on Zamenhof's idea of a 'Provisional Comprehensive Dictionary' that indexes the current lexical material of Esperanto as exactly and comprehensively as possible, serving as basis for an 'Official Comprehensive Dictionary'" (D. Blanke, 1998, pp. 144-145). Although it was scheduled for publication in seven parts, only four parts were published between 1923 and 1929 (see Wüster, 1923/1929). However, it contained all the lexical material of Esperanto that had been elaborated up to that point. From 1929 until 1998, it was still the most comprehensive Esperanto dictionary (see Gajdos & Felber, 1998, p. 8).

As a lexicographer, Wüster documented the basic words of Esperanto, thus providing a general dictionary or Language for General Purpose (LGP) dictionary. Christian Galinski recovered the other parts of the dictionary, on lexicographic file cards from Wüster's Wieselburg Terminology Centre. The Esperanto material is part of the Science Theory Archives at the University of Vienna. Until 2011, Gerhard Budin was the coordinator of the Wüster Archive project (see Budin, 1998).

Wüster was active in two important lexicographic areas. On the one hand, Wüster's specialized lexicography practice focused on the design, compilation, use and evaluation of specialized glossaries, e.g., the International Electrotechnical Vocabulary (IEV) at the International Electrotechnical Commission (IEC). According to Ruppert, "from 1928 to 1937,

the Committee, including … and Dr. Wüster (Austria), met once or twice a year to select the terms to be included in the Vocabulary and to draft the definitions" (Ruppert, 1956, p. 4). The IEV contains terms and definitions of electrical and electronic terminology. It is published as a series of publications in the IEC 60050 series under the supervision of IEC Technical Committee 1 (Terminology), one of the 175 IEC technical committees (Krommer-Benz et al., 1999, p. 2120). Today, the vocabulary is accessible online as a terminology database at <http://www.electropedia.org/>. On the other hand, his interest in theoretical lexicography dealt with analyzing and describing the semantic relationships in the lexicon of a language. Another theoretical aspect was the development of dictionary components and structures involving the information in dictionaries (see Wüster, 1964a).

1.2.6 The Terminologist

Eugen Wüster's main achievement was in terminology (Gajdos & Felber, 1998). His long-life work in terminology resulted in the formulation of the basis for the general theory of terminology. Among his many projects in this area, we should point out his doctoral dissertation, the ISO recommendations, the establishment of Infoterm, the general theory of terminology, to mention just a few.

The two distinctive characteristic features of 'interdisciplinary' and 'professional communication' (Picht, 1994/1995, p. 138) describe on the one hand Wüster's own professional background and orientation, and on the other hand, the mass of theory upon which he had an influence. Wüster was the first to apply terminology systematically to designate a specific scientific or terminological area. According to Picht, Wüster developed "a coherent theory of terminology which went much further than individual uncoordinated research activities, and which was to furnish the guiding principles for the developments which have occurred over the past 15 years" (Picht, 1994/1995, p. 137). For Wüster, terminology meant the concept system and the naming system of a specialized domain, including all specialist expressions in normal use. He applied his terminology principles first to the field of electrical engineering. Terminology, the discipline, was defined by Wüster as a linguistic and pragmatic discipline, which at the international level provides comparisons between concepts and written terms in languages for special purposes.

Eugen Wüster is considered the founder of modern terminology which has been seen as an independent discipline ever since he presented his doctoral dissertation *Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik* (1931). Wüster set up the initial theoretical framework for the discipline that he presented in books and more than 500 articles (see Felber, 1980a; Kingscott, 1998; F. Lang, 1998). His work served as the basis for what has been called the "Vienna School of Terminology," characterized by a conception of the discipline centered on the concept and oriented towards international normalization of scientific and technical terms. To our knowledge, Felber's article "The Vienna School of Terminology, Fundamentals and its Theory" (1981a) is the first to name "the approach of the VGTT [Vienna General Theory of Terminology]" (p. 70) as it is known today. On this issue we share Picht's opinion as he states that "since the early 1980s the notion of 'schools of terminology' has been appearing in the literature (e.g. Felber 1981: 69), without any further definition of what is to be understood by this term, or wherein the fundamental 'school-constituing distinctions are deemed to lie" (Picht, 1994/1995, p. 151). Although terminology researchers still talk about "Terminology Schools," such as the Prague School, Soviet School and the Vienna School of terminology, we adhere to Laurén and Picht's (2006) opinion: "A previous investigation carried out by the present authors (Laurén / Picht 1993) concluded that there are no reasonable grounds for "schools" in the philosophical sense, but rather foci of interest governed by practical needs and different research interests" (p. 167). Therefore, this dissertation will not concentrate on describing and differentiating their characteristics. The interested reader can pursue this particular subject in more depth in Laurén and Picht (1993). Other insights are seen in Humbley (1997) and Budin (2001).

From the 1950's onwards, Wüster campaigned enthusiastically for the establishment of an international center to coordinate terminology work and documentation; this campaign led to the creation of Infoterm. It was the United Nations Educational, Scientific and Cultural Organization (UNESCO) which, because of his interest in having such a center, asked Wüster to create a business plan for an international center for terminology. He completed the plan in 1969 and remained the scientific director of Infoterm until the end of his life (Infoterm, 2004). When Infoterm was founded in 1971 through a contract between UNESCO and the Austrian Standards Institute (ÖN), Eugen Wüster's colleague, Professor Helmut Felber, was appointed

to manage Infoterm and to administer the Secretariat of ISO/TC37 "Terminology - Principles and co-ordination." All the work done and reported on so far has been basically carried out in a villa next to the Wüster & Co. factory in Wieselburg. From 1951 until 1963, Anneliese Lang and Friedrich Lang, both linguists (Infoterm, 2004), worked there as librarians, lexicographers, terminologists and organizers of meetings and conferences of different kinds. For the last 14 years of his life, Wüster's only assistance came from Friedrich Lang.

1.2.7 The Terminographer

Eugen Wüster was a major provider to one of the oldest ordered terminologies, publishing extensive vocabularies of the International Electrotechnical Commission (IEC) (Kingscott, 1998, p. 18). Wüster found that the problem with standardizing concepts and concept systems is that each language has only several thousand morphemes to describe millions of concepts. Consequently, to describe new concepts we do not use new word elements, but rather we combine pre-existing morphemes or we give new meaning to existing words. As Kingscott (1998, p. 18) tell us, the German standard Deutsches Institut für Normung (DIN) DIN-2332 is based on Wüster's work in this area.

Apart from all his work for the International Federation of the National Standardizing Associations (ISA) ISA 37 and ISO/TC37, Wüster continued his commitment to working on the terminology of electrical engineering that was in the IEC, and specifically in the Commission IEC1 "vocabulary." This Commission prepared the International Electrotechnical Vocabulary (IEV), the first one-volume edition which was published just before the War. After World War II, the IEC decided to start work on a second edition. This time, each of the 24 groups of terms would appear in separate brochures. Despite the post-war difficulties, Wüster was very quickly active in IEC1 activities. In addition, he coordinated the German language contributions because Germany was, for a certain period of time, excluded from international activities or unable to contribute (F. Lang, 1998, p. 17).

Another of Wüster's terminographic projects was the preparation of *The Machine Tool* dictionary on behalf of the Economic Commission for Europe (ECE). It was in April, 1951, that Frederic Lang had to learn how to manage ISO meetings. Both Wüster and F. Lang were

invited to come to the ECE in Geneva to present the general outlines of the forthcoming terminology standardization. The result was a contract for the preparation of a dictionary based on these principles. The 1401 concepts in *The Machine Tool* were arranged according to the Universal Decimal Classification (UDC) system, showing terms and definitions in English and French, but only the terms in German. Terms and definitions were mainly taken from standardized sources. The theory and practice behind the making of this dictionary were carefully presented in the introduction of the dictionary (see F. Lang, 1998, p. 18). It can be considered a classical guide for both specialized lexicographers and terminologists.

1.2.8 The Professor

Eugen Wüster also contributed to teaching terminology. From time to time, for almost 20 years between 1955 and 1974, he lectured at the University of Vienna. In 1955, he started lecturing on woodworking machines and tools at the Hochschule für Bodenkultur [School of Agriculture and Forestry] in Vienna. Then, from 1972 to 1974, he gave lectures as an honorary professor on Lexicology, Lexicography and, specifically Terminology Science and Standardization for the Department of Linguistics at the University of Vienna (F. Lang, 1998, p. 14).

Eugen Wüster was very interested in terminology training. Sager states that in 1974, in a symposium on terminology and special lexicography, organized by the Translators Organisation of the Federal Republic of Germany, Wüster presented a paper on terminology training. He concentrated his talk on some basic questions such as "What is terminology?; Who needs to be trained in terminology?; What degree of terminology knowledge is required in each case?; Who should teach terminology? and How should terminology be taught?" (Sager, 1979, p. 149). To this article, Sager (1979) added an appendix with the original German outline program for professor Wüster's lecture notes on terminology.

Helmut Felber published the lectures Wüster gave at the University of Vienna in book form in 1979. These lectures became *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* [*The General Theory of Terminology*]. Considered by Picht (1982) as teaching resource, the book is the theoretical background to the standardization of

terminological principles and summarizes the principles of Wüster's theory. Because of his teaching experience, Wüster also worked as a chairman of a commission for terminology and lexicography set up by the Association Internationale de Linguistique Appliquée (AILA) (Felber, 1973, p. 183; 1980a, p. 12). His mission was to examine the state of terminological research and training at universities.

1.2.9 The Translator

Eugen Wüster was a translator as well. He translated mostly German literature into Esperanto. Besides translating mainly from German, he also translated literature from French and Italian into Esperanto. Most of these translations were published in the German Esperanto Gazete *Germana Esperantisto* (1905-1935) by the German Esperanto organization. Two other Esperanto journals where he published were *L'Esperanto* and *Heroldo de Esperanto* (see A. Lang et al., 1979).

In the compilation of Wüster's bibliography brought together by A. Lang et al. (1979, pp. 55-56), one can find references to 12 translations published between 1915 and 1936. Among them is Dante Alighieri's *La dia komedio [The Divine Comedy]*, published in excerpts in *Germana Esperantisto*.

Two other complete short stories appeared as single books. *La Kantistino* [*The Singer*], by the German poet and novelist Vilhelm Hauff, is a short story written in 1826. It was a translation running 62 pages published in 1921. The other translation was *Petro Schlemihl* [*The Wonderful History of Peter Schlemihl*] by the German poet and botanist Adalbert von Chamisso. This translation is described by the Esperanto-USA online store as a "classic translation, by the inventor of the science of terminology, of the story of the man who sold his shadow." This short story was originally written in 1813 and its translation, running 89 pages, was recently published in 2007.

1.2.10 The Linguist

The above remarks may well clarify how Eugen Wüster, being an engineer, was also interested in linguistics. Some of the areas in which Wüster had an impact and in which he has

been recognized as an important contributor to linguistics are the ISO terminology principles and coordination, terminology, German orthography, the Universal Decimal Classification system, documentation, Esperanto, planned languages and the general theory of terminology. Wüster was also very familiar with the work of the leading linguists of his time, such as Leo Weisgerber (1899-1985) who was considered a representative of the so-called neo-Humboldtian trend in ethnolinguistics (Bynon 1966, p. 469). Although Weisgerber was recognized as a leading linguistics scholar of his time, his work in languages other than German does not seem to have gained much recognition. In fact, he was in part responsible for the promotion of the Breton language during the occupation (Wmffre, 2007, p. 96) and he was also in charge of the Breton language radio broadcast (pp. 97-98). The limited dissemination of his work in other languages, his possible political involvement with National Socialism and the normal progress of linguistic theories may have played against the distribution of his work. One issue of importance, and one that is probably not even acknowledged by many, is that Weisgerber's idea on the "wording of the world" [Worten der Welt] was an idea that Wüster agreed with, as it is to be seen later.

In this regard, reading Antia (2002), we realize that half of the articles by Wüster that were compiled by Picht and Schmitz (2001) were published in linguistic journals. Antia comments that "the last chapter [Picht and Schmitz (2001)] is a tribute to Wüster by the eminent linguist, Leo Weisgerber" (Antia, 2002, p. 102). Antia adds that "what Weisgerber sees as Wüster's pioneering and insightful practical work on the relationship between word and object has a very theoretical side which we find, for instance, in the well-known piece 'Das Worten der Welt' (The wording of the world) – incidentally dedicated to Weisgerber" (Antia, 2002, p. 105). With this quotation, we can see that there was mutual admiration between Wüster and Weisgerber. In Wüster's article (2003a) "The wording of the world presented graphically and terminologically," Juan Carlos Sager, the translator, states that "this essay from 1960 was written as a tribute to the great German linguistician Leo Weisgerber who was the first to recognise that Wüster's work on terminology had relevance for applied linguistics" (see Wüster, 2003a, p. 269). Wüster (2003a) repeatedly referred to Weisgerber's article "Das Worten der Welt als sprachliche Aufgabe der Menschheit," published in 1955. Several

passages in the article show agreement with Weisgerber's ideas (see pp. 270, 274, 278, and 280) as a sort of guide to Wüster's wording of the world.

By the same token, Humbley (2004, 2007) illustrates how Weisgerber gives Wüster's doctoral dissertation credit within the field of linguistics:

> En 1931 est paru un ouvrage qui modifia de fond en comble l'état de la science dans cette discipline. Pour la linguistique, la thèse de Wüster, [Normalisation linguistique internationale en technologie] fut quelque chose de complètement neuf. On ne pourra plus jamais ignorer cette immense quantité de problèmes soulevés et de documentation présentée, le tout en quelque 400 pages. [Humbley's translation] (cited in Humbley, 2004, p. 34)

We may interpret the quotation as a novelty in linguistics. Wüster's doctoral dissertation implied an improvement in linguistics, and for an improvement to take place, it is necessary for people to make changes from different points of view. In 2007, Humbley confirms Weisgerber's opinion on Wüster's place in linguistics through the following passage:

> Pour le linguiste, [Wüster] permet non seulement de découvrir la langue de spécialité, que celui-là n'a pas vu naître (et qui dépasse de loin en quantité tout ce que nous savions déjà de la langue générale et spécialisée) mais aussi de prendre conscience des nombreux problèmes qui se répercutent sur la construction de la langue (Ausbau der Sprache), dans tous les domaines et pour tous les concepts, provoqués par les changements technologiques. [Humbley's translation] (cited in Humbley, 2007, p. 88)

Similarly, Felber (1973) remarks that the publication of Wüster's doctoral dissertation by the Association of German Engineers was delayed because the examining committee found the manuscript too oriented towards linguistics. According to Felber (1973),

> the term "Angewandte Sprachwissenschaft" [Applied Linguistics] was coined by him. First extensive research in the field of linguistics resulted in a pioneering work, namely "Internationale Sprachnormung in der Technik" [The standardization of international technical terminology] leading to the development of a special interdisciplinary field which today is called "General theory of terminology." (p. 182)

Wüster was also heavily engaged in activities and projects dealing with applied linguistics (lexicography, simplification of German orthography, alphabetic rules). Although it was written for a degree in engineering, Wüster's dissertation would have easily met the

requirements for a degree in applied linguistics. As Gajdos and Felber wrote, Wüster's doctoral dissertation "became immediately a standard work in applied linguistics and was the pioneering document that influenced Eugen Wüster's scientific efforts for the rest of his life" (Gajdos & Felber, 1998, p. 5).

Other authors confirm the linguistic nature of Wüster's work by identifying its epistemological roots within saussurean linguistics. As Lurquin declared: "E.W. se situe dans la perspective structuraliste. Le fait de considérer les terminologies techniques et scientifiques comme des systèmes de notions interdépendants, et non plus comme des listes de mots à traiter à l'unité" (Lurquin, 1979, p. 57). This was later confirmed by Felber who clearly places Wüster's work within the saussurean paradigm: "Wüster's research was based on theories established by de Saussure (the difference between language as a system, *langue*, and speech, *parole*)" (Felber, 1980a, p. 11). Pierre Lerat (1989, p. 54) has also shown how Wüster adheres to Saussure's ideas: "la division principale est saussurienne : en haut la langue ("Sprachsystem"), en bas la parole ("Sprechen")."

Eugen Wüster was heavily influenced by Saussure's ideas on linguistics, specifically the distinction between language as a system and the way a language is actually used for communication. Saussure's work on signs and symbols led Wüster to elaborate a conceptual system of signs and symbols which became the DIN draft standard 2338. The complex relationships between concepts in terminology work and specialized dictionaries led him to establish an additional system, which became the ISO standard 1951 "lexicographical symbols particularly for use in defining vocabularies."

Wüster's life was marked by the most influential historical conjunctures of the twentieth century and by an intellectual passion that led him constantly to cross-disciplinary boundaries. Yet, most of his life was devoted to a humanistic endeavor in the field of applied linguistics. This will become clearer through the study of his work and publications.

1.3   Eugen Wüster's Major Works

Wüster's work in terminology spans nearly 60 years and is known for the breadth, originality and quantity of his contributions to Esperantology, planned languages, language

planning, information and library science, the Universal Decimal Classification system as well as thesauri, lexicography, terminology standardization and terminology science. Wüster published in major linguistic journals early in his career (see Felber, 1998; A. Lang et al., 1979). A number of his papers, which proved to be seminal to the theory of terminology, were accepted by linguistic journals notably *Linguistics, Le Langage et l'Homme* and *International Journal of the Sociology of Language*.

Below, we describe some of Wüster's most important works which serve as evidence of his meticulous contribution to terminology science. For this, we have selected five of his best known publications, according to the work quoted, cited and mentioned in our corpus. These five publications are the *Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik* (1931), *The Machine Tool: An Interlingual Dictionary of Basic Concepts* (1968b), *The Road to Infoterm* (1974a), "Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften" (1974b, 1976a, 1981) and *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (1979a, 1985b, 1985c, 1998). Obviously, Wüster published much more than these five works (see Appendix B), but a discussion of the criticism leveled towards each of these selections serves the specific purpose of understanding the surge of interest in Wüster.

Eugen Wüster's intellectual production moved from an initial concern about planned languages and the elaboration of internationally standardized terminological principles through the establishment of an international center for the coordination of terminology work and terminological documentation, to a broad characterization of a general theory of terminology in his later work, where he emphasized the need for unambiguous international communication. Although he was involved in professional work in several fields, it was terminology, together with associated work in standardization and documentation, which became his principal interest. He is remembered mostly for his general theory of terminology, which remains both influential and debated. However, as we mentioned above, Wüster's journey into applied linguistics started with his doctoral dissertation.

1.3.1 *Internationale Sprachnormung in der Technik*

Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik [International Standardization of Language in Engineering, Especially in Electrical Engineering] (1931) was Wüster's first major publication, and with it, he became a doctor of technical sciences and his name became notorious. His book became a standard work in applied linguistics and was translated into Russian in 1935. It represents the pioneering document for terminology in a specific technical domain and for terminology standardization. It is considered Wüster's seminal work as it served, for the International Federation of the National Standardizing Associations (ISA), as the driving force for the establishment of a technical committee under the name TC37 "Terminology (principles and co-ordination)" (Felber, 1976, p. 281). The committee concentrated on formulating general principles and rules for terminology standardization.

Today, there is a general agreement that modern terminology become visible in the 1930s with this work of Wüster in Vienna. In his doctoral dissertation, Wüster established the groundwork for working methods and principles for terminology (Cabré, 1999a), with the aim of standardizing scientific language. According to Felber (1981), Wüster laid the foundations for terminology as an independent discipline and afterwards established terminology science. In the field of language planning, it was also considered standard reading in terminology science and the best and most comprehensive scientific work on the issue of planned languages at that time (see D. Blanke, 1998). Wüster's doctoral dissertation may be the first systematic model of terminology and the first description of language for specific purposes, focusing on standardizing technical language.

1.3.2 *The Machine Tool*

The Machine Tool: An Interlingual Dictionary of Basic Concepts (1968b) remains one of Wüster's most cited publications (see chapter 4, Table 11), and its structure has not since been imitated. It is an innovative English-French technical dictionary, with a German supplement. It comprises an alphabetical dictionary and a classified vocabulary of machine tools with definitions and illustrations systematically organized according to the UDC system.

It was prepared under the auspices of the United Nations, Economic Commission for Europe (UNECE). It reflects the total volume of work Wüster was able to coordinate from the 1950s to the 1970s.

The dictionary comprises two volumes. The master volume consists of two parts subdivided into 11 chapters. Chapter 1 describes the history of the dictionary, chapter 2 contains lexicographical notes. Chapter 3 provides the bibliography. In chapters 4 and 5, one can find explanations of both the terminographical method and the symbols used. Chapter 6 has the principal sections of the vocabulary while chapter 7 has the conceptual scheme of the vocabulary. Chapter 8 contains the rich vocabulary; the English and French terms in classified order, with definitions and illustrations and the alphabetical indexes. The detailed description of the method makes it possible to use the dictionary as a guideline for a terminology project or as a textbook (Felber, Galinski, Hofstädler, Nebodity, & Schöndorfer, 1986).

In order to test the structure of the multilingual term bank of the European Commission, known as EURODICAUTOM, the compilation of Wüster's dictionary *The Machine Tool* started as a contract between the European Commission and Infoterm. EURODICAUTOM, created in 1975, was the pioneering terminology data bank of the European Commission (formally the Commission of the European Communities). This project had two main objectives: i) to undertake a pilot project parallel to the elaboration of terminological principles and methods to be derived from practical experience in order to test applicability and efficiency, and ii) to have *The Machine Tool* in machine-readable form, initially for use by translators and other Commission staff (see Felber et al., 1986; Goffin, 1997). With this project, other functions of terminology became important. The system of concepts expressed using terms became the basis for the ordering and the transferring of knowledge, the storage and retrieval of information, and for knowledge engineering. According to Berteloot (2008, p. 15), in 2007, the inter-institutional terminology database Inter-Active Terminology for Europe (IATE) replaced EURODICAUTOM.

In general, *The Machine Tool* dictionary covers the terminology of machine tools, specifically the basic concepts common to all or many machine tools that were seen, not only by practitioners but also by specialists, as valid in the late 1960s. That is why, contrary to what

has been said about Wüster's ideas on prescriptivism, the dictionary also takes a descriptive approach as confirmed by Felber et al. (1986), "although great pains were undertaken to use standardized terminological information, this dictionary is nevertheless a descriptive terminographic collection of terms and definitions" (p. 30). For example, the dictionary included many terms of recent origin which were not mentioned in any existing dictionary at the time (see Wüster, 1968b, p. 1). Although the aims of the dictionary were, first, to prove the applicability of terminology principles and, second, to achieve standardization of technical terminology, a descriptive terminology work was followed so as to determine and describe the current usage of concepts, terms and definitions. Therefore, practitioners and specialists in the field selected terms among the most commonly used and among those that best represented the state-of-the-art terminology.

Certainly, the conceptual basis is vital. What makes this dictionary different from others is its most striking features as described by Felber et al. (1986, p. 32).

1. There is one entry for every concept.
2. Definitions are based on precise methods. The conceptual cross-references reveal relationships within the conceptual system.
3. Standardized terms and definitions or parts of the definition are marked by authority symbols.
4. Any deviation in the correspondence of terms assigned to a concept (synonymy, degree of equivalence) is indicated by terminographical symbols based on the symbols used in logic and mathematics.
5. A difference is made between logical (genus-species) relationships and ontological (only whole-part) relationships in cases of homonyms representing similar concepts.

In 1990, Sager stated, "this substantial piece of work, written without the aid of a computer, remained an isolated experiment. The methodology proposed proved too complex for human processing; at the time it was not suited for conversion to automated techniques" (p. 211) and even today with advances in computers it still remains an isolated work in terminology. According to Kingscott (1998, p. 15), the dictionary set a standard that has rarely been emulated in the 30 years (1968-1998) that have elapsed since its publication. *The*

Machine Tool can be regarded as a textbook on terminography and as a model for international projects.

1.3.3 *The Road to Infoterm*

The Road to Infoterm: Two Reports Prepared on Behalf of Unesco (1974a) represents a major accomplishment for terminology studies. The two reports, "Inventory of sources of scientific and technical terminology" and "A plan for establishing an International Information Centre (Clearinghouse) for Terminology", illustrate the rapid progress of science and technology and provide fundamental reasons for the creation of an international terminology center known today as the International Information Centre for Terminology (Infoterm). Its foundation dates back to 1949 when UNESCO proposed that an "International Terminology Bureau" be founded under the common auspices of UNESCO and the ISO (see Holmstrom, 1949, p. 50). "The proposal to co-ordinate terminological activities on an international level originated with a resolution approved by the International Federation of Translators (FIT) in 1959, and was considered by the UNESCO International Committee in its first session in 1961" (Jumpelt, 1963, p. 1). Infoterm became a reality in 1971. It was established by UNESCO and the Austrian government. The focal point of Infoterm, since its very beginning, was to promote, support and organize cooperation in the field of terminology worldwide.

The objective of the publication of *The Road to Infoterm* was to record scientific literature, including dictionaries and thesauri, from all over the world with the aim to exchange scientific information at the international level. The terminology activities of terminologists, linguists, subject and classification specialists, translators and interpreters, lexicographers, technical writing teachers, as well as documentalists and librarians are needed for the development of the discipline. Nevertheless, further coordination of these activities is one of the prerequisites for positive development.

The Road to Infoterm and the two reports are important because it contains systematically arranged information and terminology and their sources. It presents an authoritative summary of relevant facts on terminological standardization, both national and international. It constitutes a clear guide to institutions, organizations, committees, working

groups, and the like. It provides extracts from important UNESCO documents enclosed in the annexes. Terminological and lexicological information is not limited to particular subject fields although there is a preference for natural sciences and technology.

Kocourek (1974) in his book review of *The Road to Infoterm*, said that "being worded in English, it is likely to be especially gladly received by those English-speaking readers who are unable to benefit from Professor Wüster's fundamental terminological writings published in German and unavailable in an English translation" (p. 106). Kocourek (1974) also recognized that thanks to the publication of this book the terminology community would appreciate how far terminology had come: "Wüster's two reports are a concise but eloquent proof that terminology studies have developed into a complex and flourishing area of human knowledge" (p. 106).

1.3.4 "Die allgemeine Terminologielehre"

"Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften" (1974b) was published in the journal *Linguistics*. It stands out from the other three selections because, for the first time, Wüster explicitly describes a general theory of terminology. In the article, Wüster explains that this general theory of terminology spreads into other disciplines such as linguistics, logic, ontology, information science and other sciences; a fact that makes terminology an interdisciplinary field.

The first French version of this article is an extract from the German article. This fact is indicated in the only footnote used in the article. The footnote reads: "extrait d'un article publié par l'auteur, en allemand, dans la revue "Linguistics" (Mouton, La Haye), 1974-01" (Wüster, 1976a, p. 49). The extract corresponds to the lecture Wüster gave in Montreal, Canada, in 1975, during the fourth international colloquium organized by the Régie de la langue française du gouvernement du Québec. It was published in the *Actes du Colloque International de Terminologie* in 1976, under the title "La théorie générale de la terminologie – un domaine interdisciplinaire impliquant la linguistique, la logique, l'ontologie, l'informatique et les sciences des objects" (Wüster, 1976a). The second French version was published in two parts

in 1979, in the journal *Le Langage et l'Homme* under the title "La théorie générale de la terminologie – (I) et (II)" (Wüster, 1979b, 1979c). A third translation is found in *Textes choisis de terminologie* (Vol. 1, Fondements théoriques de la terminologie), published in 1981. The title of this third version is "L'étude scientifique générale de la terminologie, zone frontalière entre la linguistique, la logique, l'ontologie, l'informatique et les sciences des choses" (Wüster, 1981). For the purpose of this analysis, we have selected the 1979 translation as we consider it the most legible and most complete compared to the other three French translations that are extracts from the original.

Due to the multidisciplinary nature of terminology, Wüster (1979b, p. 60) had already suggested placing terminology within the domain of applied linguistics, so as to include the participation of other fields of study. Among the fields of study Wüster treated in this article, we should stress linguistics, logics, ontology, computer science, and objective sciences thus, highlighting the interdisciplinary (drawing from several fields of study) and multidisciplinary (making use of several disciplines at once) nature of terminology.

As to the link between linguistics and terminology, Wüster (1976a, p. 51) contrasts language for general purposes (LGP) to terminology in an effort to distinguish LSP from LGP. In a review of the book *Terminologie und Wissensordnung. Ausgewählte Schriften aus dem Gesamtwerk von Eugen Wüster* (Picht & Schmitz, 2001), a collection of Wüster's writings already mentioned, Antia (2002) refers to the article "Die allgemeine Terminologielehre" and says that "Wüster seems to be claiming a place within linguistics for LSP/terminology, … Rather than imply polarity, Wüster appears to be indicating what is and what is not worthwhile for linguistics to study in LSP/terminology" (p. 105). Antia's conclusion is that "Wüster had a positive attitude towards linguistics" and that more than half of the articles selected for the collection "were published under linguistic auspices" (Antia, 2002, p. 106). However, Wüster also states that the difference between terminology and linguistics depends on the approach to language. A synchronic approach to terminology would deal with the state of the language characterized by the primacy of concepts over terms and the primacy of vocabulary over grammar. The diachronic approach takes into consideration the evolution of language,

exemplified by the awareness of word formation, the international nature of language and the primacy of written forms over oral forms (Wüster, 1979b, pp. 61-63).

Wüster showed that logic and ontology can also be applied to terminology. He referred to logic and ontology in terms of the possible relationships between concepts in a system of concepts and between objects in real life. Additionally, since linguistics does not study concepts on their own, but in relation to word formation, he states that "le travail en terminologie part de la notion. Il ne lui reste donc, en ce qui concerne le côté notionnel, qu'à s'appuyer sur les sciences qui ont dans leur compétence les relations entre les notions et entre les individus, c'est-à-dire la logique et l'ontologie" (Wüster, 1979c, p. 59). This statement leads us to the relationship between objects and concepts, therefore to the study of the theory of objects and the theory of concepts. As stated by Picht (1994/1995, p. 141), the current linguistic theories at the time, dominated by Chomsky's ideas or by the structuralists, did not provide other solutions to the practice of terminology as suggested by Wüster.

Wüster also indicates the potential contributions of information technology to terminology and documentation. Computers stock information, but the information has to be recovered in some way. The idea of terms as labels to record and retrieve information is clearly expressed in Wüster's terms: "pour permettre de les [informations] retrouver, chaque information se voit attribuer une sorte d'étiquette" (Wüster, 1979c, p. 67) for example, indexing terms such as key words and descriptors serve to recover information. Nowadays, the relationship between computer science and terminology, as dreamed of by Wüster, is no longer an illusion. As Nuopponen (1994c) states: "The fata morgana Wüster saw at the end of the sixties has for some time now been rapidly turning into a reality – but we are now chasing new fata morganas" (p. 330). Terminology and information technology have contributed to the development of corpus linguistics, to the growth of artificial intelligence, to the establishment of expert systems, to the move to computer-aided translation, to the creation of terminological data banks and to the appearance of concordancers. In fact, the internet allows one to gather and search corpora of electronic texts. Thus, terminologies are important for ordering, transferring, disseminating, translating, storing and retrieving information and/or knowledge.

According to Wüster (1979c), linguistics, logic, ontology and computer science are all related to the general theory of terminology and they all deal with concepts and their designations in a formal way. This means that they only analyze relationships between concepts, between designations and between concepts and designations. However, "les notions et les dénominations en elles-mêmes, relèvent des sciences des domaines, comme par exemple la physique, l'électrotechnique, la médecine, l'économie politique, le droit" (Wüster, 1979c, p. 70). The difference is established in both form and content. Formal sciences deal with methodological analysis while objective sciences deal with meaning, sense and semantics. Wüster's conclusion is that there must be a way to collaborate between language specialists and domain specialists in order to develop better terminologies since content and form are closely related.

Picht (1994/1995) clearly described the "multidisciplinary nature of terminology" and plainly affirmed that the notion of a uni-disciplinary approach to terminology may not furnish adequate solutions for terminological work, an idea that was well stated in Wüster's article and that probes the multidisciplinary view of terminology.

1.3.5 *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie*

Eugen Wüster's fame rests upon his general theory of terminology (1979), which has been one of his most contentious works. The original version of *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* [*Introduction to the General Theory of the Terminology and Terminological Lexicography*] was published in Germany in 1979, shortly after the death of Eugen Wüster. As pointed out by Picht (1994-1995), Wüster's death prevented him from finishing this work. A close look at the table of contents indicates that he had other sections prepared which were to be included. Thus, "the work is a fragment, but one which is so complete in itself that, after the careful attentions of Wüster's colleague of many years standing, Professor Helmut Felber, it offers today what is probably the most complete presentation of Wüster's theory" (Picht, 1994/1995, p. 142).

Einführung in die allgemeine Terminologielehre und terminologische Lexikographie is based on the lectures Wüster gave at the University of Vienna between 1972 and 1974. Helmut Felber, his long-term colleague, compiled and published posthumously the manuscript, which is considered by F. Lang (1998, p. 21) as Wüster's leading achievement. In 1985 and 1991, two reprints of the German version were published respectively; implying that the book had quickly became a model. An annotated reading of the forewords of the three separate editions shows an unmistakable progression of Wüster's legacy (see Humbley, 2007). While it is true that this work was not published in full until 1979, a portion of it had already been made available (see Wüster, 1974b). Picht (1994/1995, p. 142) had the opportunity, in the summer of 1973, to read the manuscript of the first lectures which would become the opening chapters of the German version of the book.

Research on the different translations of *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* shows that the textbook has never been officially published in English or French, although there is a working translation in English and another in French, both dated 1985 (see Wüster, 1985b, 1985c). Both translations were sponsored by the Secretary of State of Canada [Girsterm - Université Laval; Secrétariat d'État; Gouvernement du Québec-Office de la langue française] and are of limited accessibility. A search of the WorldCat catalog with the English title retrieved no records. A search with the French title shows just one library worldwide holding the book, this is the Library and Archives Canada in Ontario. Several attempts to translate it have been identified by Picht (1994/1995, p. 137) who said that the work was supposed to have been published in English and French in 1993. In Spanish, there is only one officially published translation. The first Spanish version appeared in 1998. Budin and Galinski confirmed in the preface of this first Spanish version that until then, it was only possible to find this work in German, thus being of limited accessibility in other languages. A second Spanish edition appeared in 2003.

As we have said before, the best ideas are born of necessity and the general theory of terminology is no exception. It was created more than forty years ago at a time when there was but disagreement in terminology work. Wüster's general theory of terminology arose from many years of reflection as expressed in his doctoral dissertation *Internationale*

Sprachnormung in der Technik, besonders in der Elektrotechnik (1931), *The Machine Tool* (1968b), *The Road to Infoterm* (1974a), his work on the ISO committee and his work for UNESCO. Every day new informative and communicative needs appear, terminological applications diversify and knowledge and technology generalize. The general theory of terminology met the need to guarantee a systematic methodology for terminology. With the general theory of terminology, Wüster proposed order. Professional communication and knowledge transfer needed technicians and scientists to standardize their terminology, both terms and concepts, since the rapid growth of concepts in all fields of knowledge gives rise to communication problems. All scientific and technical concepts have to be represented by terms which allow for better information retrieval.

The general theory of terminology is concept-centered and subject-field oriented. According to Felber (1984), the general theory of terminology is a subject field oriented approach. "It places the concept and its relationships to other neighboring concepts as well as the correspondence concept-term and the assignment of terms to concepts in the centre of its reflections" (Felber, 1984, p. 96). Therefore, the general theory of terminology is fundamentally an onomasiological approach to terminology. It implies that concepts and the relationship between them, rather than between terms, are the objects of research in terminology. For the general theory of terminology, terms are labels, which refer to concepts; their linguistic attributes are somehow irrelevant. The basic axioms of the general theory of terminology are summarized in Nuopponen (2003, p. 225):

- TW [Terminology Work] starts from a concept (cf. lexicography) and its goal is to clearly delimit the concepts from each other
- Concepts and terms are seen as separate units
- Emphasis is on a synchronic perspective
- Concepts and terms can only be studied in relation to the related concepts and terms.
- Organization of terminological entries is systematic or thematic instead of alphabetic

For Wüster, terminology had clear fundamentals. He always saw terminology as being concept-based. He explained this in a key passage:

> All terminological research uses concepts as its starting point. Its aim is to achieve clear delimitations amongs the various concepts. In terminology research, the realm of concepts is considered quite distinct from the real of designations (=terms). This is why terminologists refer to *concepts* while linguists speak of *word contents* with reference to general language. For terminologists, a termimological unit consists of a *word* to which a concept is related as its meaning while for most of today's linguists the word is an inseparable unit composed of word form and word content. (Wüster, 1985c, pp. 21-22).

According to Felber (1984), the four field word model lies at the center of the general theory of terminology. It may be the most obvious link between terminology and linguistics due to the fact that the term is considered a linguistic symbol. Wüster introduced Ferdinand de Saussure's findings on the view of language as a system in his four field word model, as shown in Figure 4. With this model, Wüster established the concept-word relationship and pointed out the difference between lexemes *(langue)* and word forms *(parole)*. The lower part of the model represents the extra-linguistic reality and the upper part the domain of concepts. Several authors (e.g. Lerat, 1988, 1989; Weissenhofer, 1995; Budin, 1997; Galinski & Picht, 1997; Myking, 1997, 2001a; Wright, 2003); among others) have mentioned, used or referred to Wüster's four field model in their semiotic studies. For example, Weissenhofer adhered to Wüster's model, but presented an extended model because "Wüster's original sign model no longer meets the requirements of a comprehensive terminological analysis" (Weissenhofer, 1995, p. 26). Weissenhofer's model included the most important aspects missing in Wüster's version, thus ensuring a general applicability in the field of terminology, e.g. a clearer distinction between *langue* and *parole*, analysis of terms whose meaning consists of more than one sememe, and account of polysemy, synonymy, and contextual aspects (p. 27).

Figure 4. Wüster's Four Field Word Model (Felber, 1980b, p. 68)
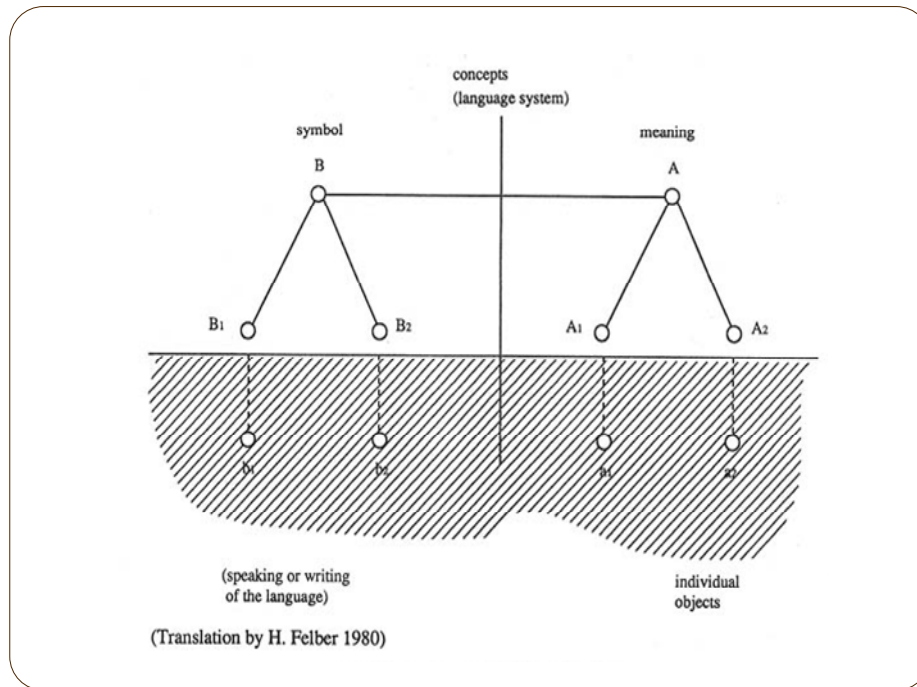
In general, very few studies have concentrated on analyzing this very specific aspect of Wüster's work. To our knowledge, Adelstein (2000) is the only author who has dedicated a complete article to analyzing in depth the four field word model to "show the linguistic character of the term concept and his explanatory model in Wüster's work" (p. 67). In her article, Adelstein concluded that

> en Wüster no sólo no se niega su carácter lingüístico sino que es justamente este carácter el que sostiene sus propuestas para el trabajo terminológico. Por otra parte, nos parece que el análisis de las representaciones que Wüster plantea resulta útil a la hora de evaluar y proponer modelos de representación lingüística para las unidades de la terminología. (p. 87)

> [the lack of a linguistic component in Wüster's work is criticized however it is the one which embraces a proposal for terminology work. Moreover, it seems that the analysis of representations he proposed is suitable to evaluate and propose models of linguistic representation for terminology units.]

In the general theory of terminology Wüster gives a precise vision of all the methodological elements that are needed for terminology work, in the hope that it will solve all problems related to professional communication. In fact, this direction is the greatest premise

of Wüster's work. He did not create a single theory of terminology, but established the conceptual and methodological foundations of planned languages, dedicating special attention to the development of the most appropriate tools for professional communication. "Wüster's research was based on theories established by Ferdinand de Saussure (the difference between language as a system, *langue*, and speech, *parole*) and by Schlomann (systematic ordering of a specialized terminology in specialized vocabularies)" (Felber, 1980a, p. 11).

The general theory of terminology has been developed from practice and for practical purposes. Standardization and language planning, in their broader sense, are the main goals of this theory. It is the basis of terminology work and illustrates the application of terminological principles and methods. It is intended to be used nationally and internationally to carry out unified terminology work. The practical goal was international language standardization to offer experts better access to both the structure of the subject-field and unambiguous communication. As Felber pointed out, "the GTT is the theoretical background to the standardization of terminological principles" (Felber, 1980b, p. 67).

An examination of the general theory of terminology from the point of view of the interdisciplinary nature of terminology reveals the connection between terminology and several other disciplines, such as linguistics, that have produced methods in language planning, lexicography, logic, ontology and information science. In chapter 2 "Fundamentals of the general theory of terminology," Felber (1984, pp. 96-103) outlines, in short, the relationships between the general theory of terminology and other disciplines. The analysis is explicitly designed to deal with problems of terminology standardization.

The most salient characteristic of the general theory of terminology is that it focuses on concepts, and guides terminology work towards the standardization of terms and concepts. This is done, primarily, to guarantee univocity in professional communication at a national and international level. This is why appraising the approach of the general theory from the point of view of the ideas proposed by the Vienna Circle is correct. The approach is based on logics, on the search for the universal language and on the uniformity of communication. In accordance with these tenets, the general theory of terminology's main characteristic is its working

method, characterized by the use of the onomasiological approach, in contrast to the semasiological approach of lexicography; hence a preference for systematic ordering.

Einführung in die allgemeine Terminologielehre und terminologische Lexikographie completes the picture of this short selection of Wüster's most significant works (see Appendix B for more descriptions). Certainly, the general theory of terminology is the terminological proposal most frequently mentioned. It has inspired a great number of terminology works carried out up to the present day. The fact that it is considered, until now, the only theoretical proposal with clear methodological principles means that it is appreciated in the field of terminology. Wüster's interest in elaborating common rules and standards for terminology work and terminology standardization resulted in the foundation of a new discipline in applied linguistics, as well as for such professional practices as lexicology and terminology. Multidisciplinary interests have contributed to the emergence of the general theory of terminology, also known as the classic theory of terminology or the traditional theory of terminology.

The importance of Wüster's general theory of terminology for terminology research and practice cannot be underestimated. Computer assisted translation, language engineering, terminology management, knowledge organization, technical writing, just to mention some subjects, are fields in which Wüster' general theory of terminology has made significant contributions.

1.4   Conclusion

Between 1898 and 1977, the echo of European intellectual circles shaped Wüster's intellectual life. This fact is due, first, to the historical moment characterized by a concern for unambiguous international communication and, second, to Wüster's fascination for language as a tool of scientific communication. The amalgamation of these two facts led Wüster to participate in the European scientific revival of his times and to establish permanent relationships with linguistic topics and major personalities from the period.

It is important to highlight the historical and intellectual context in which Wüster's productive life took place. Although he had to endure the consequences of the two world wars

that the modern world witnessed and the hardships of great economic depression, he also had the chance to enjoy the greatest advances of the industrial revolution and the effervescent philosophical development that took place in his own city. He not only witnessed, but also actively participated in the foundation of the postwar society by working within international institutions created to guarantee peace and understanding amongst the peoples of the world.

Contextualizing Wüster's life and work involves situating his lifespan within the major socio-historical events that were happening at that moment, such as the time when Esperanto, the Vienna Circle, the UN and UNESCO were all concerned with achieving unambiguous scientific and international communication. The objectives of these institutions and those of Wüster himself were very similar. They wanted to obtain precise communication, without ambiguity, on specialized subjects. The methods and the way to reach these objectives, however, were different.

The large spectrum of Wüster's interests is confirmed in the "667 items or the contents of the Wüster library" (Bühler, 1982a, p. 98). In addition, two bibliographies of Wüster's publications in A. Lang et al. (1979) and Felber (1998) give a fresh impression of Wüster's production. Altogether, there are over 500 publications (see Felber, 1980a; Kingscott, 1998; F. Lang, 1998) which can be attributed to Eugen Wüster, an amazing accomplishment by any standard. Thanks to Wüster's efforts, terminology work is organized internationally.

That Wüster was an electrical engineer is common knowledge. What may not be well known is that he had many other scientific interests. This chapter was intended to demonstrate that Wüster was more than what meets the eye. He was also an Esperantist, a language planner, a librarian, a lexicographer, a terminologist, a terminographer, a professor and a translator, and his main works mostly address language matters.

Chapter 2

Overview of the Reception of Eugen Wüster's Work

Eugen Wüster was, in the field of terminology, one of the most influential authors of the twentieth century. Although he died several decades ago, and after years of modest interest in his work, scholars in a variety of disciplines, including information science and computer science, have started to take an interest in his writings. Wüster's current popularity is due to his role in the development of terminology; his work has had a profound impact on almost all national and international literature in the field of terminology. Numerous authors quote, cite, or mention the celebrated author of well-known publications such as *Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik* (1931), *The Machine Tool* (1968b), and *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (1979a), among others. Since the beginning of the 1930s, Wüster has been admired and challenged by critics and quoted by both theorists and practitioners of terminology, not only in Europe, but also in the Americas.

Nowadays, 80 years after Wüster's first contribution to terminology, his popularity continues to be strong. However, to our knowledge, very few studies have concentrated on the reception of his work (e.g. Humbley, 2004, 2007). This chapter seeks to trace the path of the reception of Wüster's work and to fill in that gap. To do this, it would be useful to divide the history of terminology into distinct periods, thus making it easier to appraise the past and to place the reception of Wüster's work in a historical context. For this purpose, we propose three distinct timelines, each based on different criteria. Each timeline will then be further subdivided into its own specific time periods. It should be noted that a distinct time period on one timeline may, or may not, correspond to a time period on another timeline.

The subdivision, or periodization, of the first timeline is merely chronological; a division in terms of years. On this timeline, Auger (1988, pp. 37-43) identifies four basic periods in the evolution of modern terminology; a periodization that Cabré (1998, pp. 27-29) adopts without any modification. The first period places the origins of terminology between

1930 and 1960. In the second period, from 1960 to 1975, terminology is molded into a more scientific field. During the third period, from 1975 to 1985, interest in terminology gets stronger. The final period, from 1985 to the present, is known as the expansion as terminology research develops in many diverse geographical areas. Cabré labels the 1960s, 1970s and 1980s as the period of containment/control which "has given way to the diversified manifestation of new ideas in the 1990s and the first few years of this century" (Cabré, 2003a, p.171). From a strictly chronological perspective, we also find Rodríguez Ortega and Schnell's (2005a) proposal. They classify the history of terminology into two larger periods. They place the first period, the nineteenth century, as the awakening of terminology and the second period, the twentieth century, as being the consolidation of terminology as a scientific discipline.

The second timeline, and its periodization, is based on characteristic features in the evolution of knowledge production and dissemination within the context of terminology research. Knowledge production is a complex process in any subject field and terminology is not exempt; people need to take an interest in the topic, do research and disseminate their results in order to exchange knowledge. Castro-Prieto and Olvera-Lobo (2007) have distinguished three decades in the progression of terminological knowledge. The 1970s reflect the first increase in scientific production and the initial plans to consolidate terminology as a discipline. The 1980s are characterized as a period of theoretical reflection and the appearance of the first specialized journals in the field. The 1990s, the last decade, have been shown to be a rich period in terms of quantity and quality of research and scholarly publishing. During this decade, the production of terminological knowledge has been diverse, committed to multiple research agendas, and more practice-based.

The third timeline, and its periodization, is based on an analysis of the evolution of both terminology and linguistics, where periods are taken as phases in a broader view of scientific development. Picht (2007) distinguishes three main phases. The first phase (1930 to 1975) is the theoretical foundation of terminology. The second phase (1975 to 1995) is characterized by the pragmatic turn in terminology and linguistics, meaning a broadening of the scope of LSP and terminology. The third phase (1995 to 2007) closely links terminology to professional communication and to the rise of new theoretical approaches to terminology.

The timelines above bear witness to the growth of terminology from several perspectives, based on chronology, scientific production and the scientific development of terminology. Today, our immediate concern is to address the development of terminology based on the reception of Wüster's work. Our purpose is to trace the reception of Wüster's work from a broad perspective, which implies focusing on his contribution to the field and the implications for the evolution of modern terminology. To do this, we have identified five periods in the reception of his work, covering a span of almost 80 years, from 1930 to 2009. We have taken 1930 as the starting point since Wüster's doctoral dissertation in 1931 marks the beginning of his contribution to terminology and 2009 as the end point since this year closes the last decade. For each of the five periods, we will provide an account of key events in the reception of Wüster's work. We have identified the last three periods, thoroughly described in this chapter, because they represent the three most important decades based on the information extracted from publications dealing with the posthumous reception of Wüster's ideas. At this point, it should be stated that in chapter 4 we will show the results of an empirical-descriptive study, based on a corpus of 166 journal articles for these last three decades of our periodization, carried out to determine the impact of the reception of Wüster's work.

The current chapter concentrates on a general overview of Wüster's reception in Europe and the Americas, with three objectives guiding the discussion:

1. Identifying a historical progression of terminology on which to build our analysis of the reception of Wüster's work. To this end, we propose a timeline that will provide a brief chronological narrative emphasizing the themes and events related to Wüster's work.
2. Mapping the evolution of the current, rapidly changing scenario of the reception of Wüster's work by commenting on its reception during the last three decades.
3. Appraising the reaction to Wüster's work in order to establish key events in each period.

2.1 Reception and Significance of Wüster's Work

This study takes into consideration the work of one of the most influential terminologist of the twentieth century. Although the reception of Wüster's work is most pronounced in Europe, where most of his publications appeared during his lifetime and where he had a clear impact on his colleagues, his work was known and read in many other countries and in languages other than German.

A consideration of the significance of the reception of Wüster's work in the field of terminology is long overdue. The value of studying the reception of Wüster's work lies in the fact that his views, which have generated mixed reactions among terminology researchers all over the world, have greatly contributed to the development of terminology (see chapter 5). After the publication of his general theory of terminology in 1979, its applications, both in theory and practice, became a topic of heated debate among linguists, computer programmers, language planners, philosophers and many other professionals and scholars. These reactions can be observed in the positive commentary on his work (e.g. Arntz, 1981b; W. Blanke, 1989; D. Blanke, 1998; Antia, 2002; Budin, 2007) as well as in its negative reception which, at the same time, has pushed scholars to propose new approaches to terminology (e.g. Bourigault & Slodzian 1998/1999; Temmerman, 2000b; Cabré, 2003a; Condamines, 2005; Diki-Kidiri, 2007a). Reacting to the negative reception and the resulting new approaches, some scholars have started studying the reasons for the initial criticism while others have concentrated their efforts on analyzing Wüster's impact on the current state of affairs in terminology theory (e.g. Budin, 2001; Myking, 2001b; Candel, 2004; Humbley, 2004; Picht, 2007; Van Campenhoudt, in press). The mixed interest generated by Wüster's work is reason enough to analyze its reception. It is, therefore, time to revisit Wüster and his work at a moment when terminology is facing new confrontations, and different orientations in terminology research are being proposed.

The initial step in approaching the reception of Wüster's work is to trace when, how and why his work became known. Answering these questions will allow us to see the reactions to Wüster's work and the reasons why he was received as such. The various ways in which Wüster's ideas have been received offer penetrating lessons on the ways similar ideas are

ignored, highly praised, discarded, deformed or re-transmitted today. His name and some of his most important publications are repeatedly cited in books and articles related to documentation, Esperanto studies and terminology. This is the case not only in the English-speaking world, but also in many French and Spanish-speaking environments. Wüster's place in contemporary terminology thinking is examined through consideration of how his work has been received. For this purpose, we will discuss these reception issues in turn.

2.1.1 The Concept of Reception

In order to outline the theoretical framework for this study, it is helpful to define how we define the term "reception." We define reception as the manner in which the work of an author is read and interpreted within a given community of readers. This definition of the concept of reception will guide our research through the history of the reception of Wüster's work. We stress the importance of reception because, obviously, we are studying how and in what way Wüster's work has mattered in the development of terminology. It is only by examining the impact of Wüster's work on receptive readers that we can tell how his work has been received. For this purpose, it is necessary to briefly introduce the theory that deals with how texts are received by readers and to clarify that reception theory will be a topic to be further developed in chapter 5 when we illustrate the usefulness of such an approach in the interpretation of the results of our study.

Reception theory, proposed by Hans Robert Jauss (1982), is primarily an approach concerned with audience responses to a specific work. As a form of a reader-response theory, reception theory will be an essential tool for demonstrating how Wüster's readers came to know and interpret his work. It is thus a hermeneutic approach, which holds that meaning is created by the reader who interprets a certain significance of the content based on his socio-cultural and academic background. For this study, the reception theory approach facilitates the study of the reaction to Wüster's work by examining how his work has been translated, published, distributed, read, reviewed, and/or discussed by a given community. By studying the reception of Wüster's work, the reader's response becomes visible in the texts. In this sense, reception theory will be used to focus on how readers have actually read and understood Wüster's contribution to terminology.

In the meantime, and taking into account the concept of reception, our preliminary bibliographical research reveals that, at least in Wüster's case, few of his writings have been translated and, in some cases, have not even been published. Because of this limitation, we will explore how terminology scholars have dealt with Wüster's ideas. In other words, our main interest is to find the meaning of Wüster's work as defined by its recipients who make sense of, and interpret his work independently of their intentions. For this purpose, we will start by outlining a cursory chronology of Wüster's work.

2.1.2 Concised Chronology of Wüster's Work

The scope of Wüster's work is so large that we would not be able to truly give it justice in a short section like this one. In chapter 1, we briefly described Wüster's major publications; in this chapter, we will provide a more general picture of his works to modern terminology so as to relate them to their reception, that is, knowing the texts that are actually received. Based on the compilation of Wüster's publications in English, French and Spanish (see Appendix A and B), Wüster's enthusiasm for language matters started at a very early age. During the first years of his productive life (1920 to 1959), he paved the way for further contributions and concentrated his efforts on several projects. He compiled an Esperanto-German encyclopaedia and a bibliography of monolingual scientific and technical glossaries. As it is well-known, his doctoral dissertation was the initial step in the development of terminology work and the opening discussion on terminology standardization. The last twenty years of Wüster's life (1959 to 1977) were fruitful and mostly dedicated to the establishment and recognition of modern terminology (see Table 2).

As explained in chapter 1, it can be claimed that Wüster's writings were highly influenced by his work at his family's tool firm, UNESCO and the ISO. The publication of his writings, along with the establishment of Infoterm, was the first step towards what is today called modern terminology. His work was accessible to European German-speaking specialists; it not only set the terms and the starting points for addressing many terminological questions that were to irritate terminologists and language specialists, but also transmitted precious information about systematic terminology work and introduced a theory of terminology.

From a glimpse at the works cited in scholarly publications, authors are more familiar with some of Wüster's publications than with others (in chapter 4, we will treat this aspect in more detail). Although most of Wüster's work was originally written in German, a small portion can be traced through translation (see Table 2). Nevertheless, to our knowledge, and based on the bibliography provided by A. Lang et al. (1979), very few texts can be found in languages other than German as we can see in Appendices A and B. His translated work is limited to restricted environments and for specific purposes. For example, in the translation of *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (1979a) in English and French, the translators stated in the Foreword that the "publication of Wüster's work in translation serves not only to mark the sixtieth anniversary of the existence of terminology as a discipline, … but also to pay homage to the memory of Eugen Wüster." This was a working translation that the Secrétariat d'État, Gouvernement du Québec-Office de la langue française used for their own research and academic purposes.

Table 2. Brief Chronology of Wüster's Work

	Note: Works with an asterisk were originally written in German.
1920 to 1959	*(1923-1929). *Enciklopedia vortaro esperanta-germana, kun speciala elmontro de la Zamenjof-a lingvuzo - Enzyklopedisches Wörterbuch Esperanto-Deutsch mit besonderer Aufweisung des Zamenhof'schen Sprachebrauchs* (Vol. 1. A-K). Leipzig: Ferdinard Hirt & Son. *(1931). *Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik. (Die nationale Sprachnormung und ihre Verallgemeinerung)* (1ʳˢᵗ ed.). Berlin: VDI Verlag. (1952). The coming concentration of international terminology work (Hans J. Eberstark, Trans). *Revue de la Documentation, 19*(1), 1-7. (Original work published 1951). (1955a). *Bibliography of monolingual scientific and technical glossaries - Bibliographie de vocabulaires scientifiques et techniques monolingues* (Vol. I: National standards). Paris: UNESCO. (1955b). *Standardization of technical terms - Problems and progress (UNESCO Trans.).* (UNESCO/Ref. 96/ 5915, 13 p). Paris: UNESCO. (Original work published 1955). (1959a). La normalisation du langage technique. Problèmes et état actuel (E. Trofer, J. Lefevre, F. Lang, & R. Fisher-Mayenburg, Trans.). *Revue de la Documentation, 26*(2), 43-49. (Original work published 1955). (1959b). *Bibliography of monolingual scientific and technical glossaries - Bibliographie de vocabulaires scientifiques et techniques monolingues* (Vol. II: Miscellaneous sources). Lausanne: UNESCO. (1959c). New monolingual glossaries (I). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 5*(4), 229-233.

1960 to 1977	(1964a). *Dictionaries and glossaries (Gaps: in languages; in disciplines)*. (UNESCO/NS/Doc/WP/3.4, 10 p). Paris: UNESCO.

*(1966a). *Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik. (Die nationale Sprachnormung und ihre Verallgemeinerung)* (2nd ed.). Bonn: Bouvier.

(1968a). Letter symbols for languages. Basic symbols and additional elements (J. C. Sager & I. Wilson, Trans.). *Babel, 14*(2), 92-102. (Original work published 1968).

(1968b). *The machine tool: An interlingual dictionary of basic concepts. English-French master volume - Dictionnaire multilingue de la machine outil: Notions fondamentales. Volume de base anglais-français* (1^{rst} ed.). London: Technical Press.

(1968c). New monolingual glossaries. Second series List No.1. *Babel, 14*(2), 117-127.

*(1970a). *Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik. (Die nationale Sprachnormung und ihre Verallgemeinerung)* (3rd ed.). Bonn: Bouvier.

(1974a). *The road to Infoterm: Two reports prepared on behalf of Unesco* (Vol. 1 Infoterm Series). Pullach/München: Verlag Dokumentation.

*(1974b). Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften. *Linguistics, 119*(1), 61-106.

(1976a). La théorie générale de la terminologie - un domaine interdisciplinaire impliquant la linguistique, la logique, l'ontologie, l'informatique et les sciences des objets (Trans.). In H. Dupuis (Ed.), *Essai de définition de la terminologie. Actes du colloque international de terminologie* (pp. 49-57). Québec: Régie de la Langue Française. (Original work published 1974).

(1976b). International activity in terminology: 75 years of research - foundations and challenge for the rest of the century. In *International co-operation in terminology - Coopération internationale en terminologie. Proceedings of the first Infoterm Symposium* (Vol. 3 Infoterm Series, pp. 32-36). München: Verlag Dokumentation.

(1976c). L'activité internationale en terminologie: 75 années de recherches - base et défi pour le reste du siècle. In *International co-operation in terminology - Coopération internationale en terminologie. Proceedings of the first Infoterm Symposium* (Vol. 3 Infoterm Series, pp. 37-41). München: Verlag Dokumentation.

(1976d). Standardized terminologies. In C. Butler & R. Hartmann (Eds.), *A reader on language variety* (Vol. 1, pp. 21-31). Exeter: University of Exeter.

(1977). International filing rules. *International Forum on Information and Documentation, 2*(2), 18-29.

It is evident that the extent of Wüster's work is broad. Nevertheless, two books and three articles, among all his scholarly publications, are worth mentioning (see Table 2). A detailed report on the most cited works is in section 4.5.2. First, his doctoral dissertation, *Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik* has gone through three editions, but has never been translated into English, French or Spanish. Second, the general theory of terminology, *Einführung in die allgemeine Terminologielehre und*

terminologische Lexikographie (1979a), seems to be the best known and most often cited work. It was translated into English and French (1985) six years after the original publication was released, but the translations were never officially published. In 2001, during the Ve Réunion Plénière du Réseau Panlatin de Terminologie – Realiter 2001, "John Humbley propose de collaborer à la révision de la traduction du manuel de Wüster en français et en anglais. Infoterm a déjà délégué Gerhard Budin et John Humbley pour qu'Infoterm puisse publier ces traductions; il y a donc une possibilité de collaboration avec Amelia De Irazazábal car tous travaillent sur les mêmes textes" (Realiter, 2001, section 6.5, ¶ 4). At present, all efforts have been in vain, but there is still hope that, for the betterment of terminology, this project will become a reality. The first edition of the translation into Spanish was in 1998, almost twenty years after the original was published; a second edition was released in 2003 (see Wüster, 1998, 2003b).

Among the articles, "Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften" has been translated three times into French, but never into English or Spanish (see Wüster, 1976a, 1979b, 1979c, 1981). The French translation (Wüster, 1981) is often cited, as we will see in chapter 4, section 4.5.2. Two other articles are also worth mentioning. "Das Worten der Welt, schaubildlich und terminologisch dargestellt" and the "Die Struktur der Sprachlichen Begriffswelt" have been recently translated by Juan Carlos Sager. They were published in the journal *Terminology*; *the International Journal of Theoretical and Applied Issues in Specialized Communication*. As seen in Table 3, few of these works have been translated into English or Spanish.

Table 3. Wüster's Work in English, French and Spanish

		Translations		
Year	Original-German	English	French	Spanish
1931 1st ed. 1966 2nd ed. 1970 3rd ed.	*Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik*			
1959	"Das Worten der Welt, schaubildlich und terminologisch dargestellt"	2003	1982	
1974	"Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften"		1976 1979 1981	
1979 1st ed. 1985 2nd ed. 1991 3rd ed.	*Einführung in die allgemeine Terminologielehre und terminologische Lexikographie*	1985	1985	1998 2003
1959	"Die Struktur der Sprachlichen Begriffswelt"	2004		

2.1.3 General Glimpse into the Reception of Wüster's Work

The name Eugen Wüster is associated with modern terminology, specifically with terminology standardization. Consequently, terminology scholars have commented on his work in the most important terminology journals and books, creating thus a significant corpus of reception. By tracing both the course of his work and the reader's reactions to it, we can propose a diachronic introductory overview of the reception of Wüster's work. In chapter 4, we will specifically concentrate on analyzing the reception of his work in 166 academic journal articles.

One can surely see the significance of the reception of Wüster's work in the need to recognize and analyze the intellectual history of terminology; part of an updated heritage. With a growing community interested in terminology and despite Wüster being seldom translated,

Wüster's work has been read, interpreted, appraised and criticized across Europe and the Americas. We take the concept of reception as the implicit starting-point. We take this view in order to account for the often very different responses to Wüster's work among academic readers in different countries. Wüster's presence in the field of modern terminology is far reaching. One may say that from Wüster on, the history of terminology has been a series of revolutions either for or against his ideas. The historical significance of this reception cannot be exaggerated. Of course, such significance is derived from the positive and negative reactions that precede it. After all, we refer to a person's work that broke a barrier in international specialized communication and opened the gates to the possibilities that followed.

It is helpful to keep in mind the distinction between Wüster himself and his work. Both of them became famous, but their fame did not occur at the same time in Europe as in the Americas. Europe had the opportunity to be acquainted with Wüster and his ideas earlier and more easily than the rest of the world for his writings needed to be translated in order to be more easily read and understood. Despite this fact, Wüster was already known before the publication of his general theory of terminology in 1979. He came to be known for his work on Esperanto (1923/1929), his doctoral dissertation (1931), and then for his work with the ISO and UNESCO and his writings on Esperanto, classification and planned languages, among others. Wüster's body of writings in terminology is vast and generally applicable to the practical fields just mentioned. Although there were early attempts to make his work more accessible and more systematic, the interpretations of Wüster's writings depended very much on which publications were being read. For non-German speakers, there was not always a choice as to what to read. The readings depended on translation and on dissemination. However, to say that Wüster was frequently read is not to say that he was uniformly read. Not all parts of Wüster writings were equally well known, and even in the 1980s and 1990s some of his texts were better known than others.

As for Wüster's work, we have found very few reviews that identify, summarize and, most importantly, evaluate the ideas and information Wüster presented. It seems that the early reviews of Wüster's work were more positive than negative. Some early reviews dealt with the appraisal of *A Bibliography of Monolingual Scientific and Technical Glossaries*, both volumes

1 and 2 (see Egler, 1956; Glass, 1957; Jumpelt, 1960; Mayer, 1959). Some other reviewed publications were the article "La Normalisation du langage technique" (Chonez, 1959), the book *The Road to Infoterm* (Kocourek, 1974), and the *International Bibliography of Standardized Vocabularies* (Pinta, 1980). Most of these reviews were written in English or French and were published while Wüster was still alive. After Wüster's death, Heribert Picht and Klaus-Dirk Schmitz (2001) edited a collection of Wüster's writings entitled *Terminologie und Wissensordnung. Ausgewählte Schriften aus dem Gesamtwerk von Eugen Wüster* that Antia (2002) reviewed positively. Based on these reviews, one can say that these specific writings attracted the attention of researchers and were highly acclaimed. One of the reasons for such high acclaim was the social and academic trends in Europe around that time when international understanding was a much discussed subject in Europe.

The value of the reception of Wüster's work, however, lies in its wider scope. By documenting reactions to Wüster's work, we can appraise the discovery and development of modern terminology. With the study of his reception, we ground terminology in its historical context, and as a result, we primarily focus on uncovering how terminology scholars interact with Wüster's work and on the implications for the development of terminology, as we will see in chapter 5.

2.1.4 How Important was Wüster to Terminology?

Three figures dominate the literature of modern terminology. In Eastern Europe, Ernest Drezen and Dmitrij Semënovič Lotte and in Western Europe, Eugen Wüster. Although Wüster himself would certainly have thought that it was inappropriate to link his name with those of Alfred Schlomann, Ferdinand de Saussure, Ernest Drezen and J. Edwin Holmstrom (see Wüster, 1976b, 1976c), it is nevertheless true that Wüster's influence on the development of what came to be known as modern terminology is immense. He is the author of many of the documents that contributed to the establishment of modern terminology, and the largest part of his contribution is devoted to the establishing his general theory of terminology. His ideas are the starting point for many, if not most, topics on modern terminology, such as principles of terminology, methodology of terminology work, standardization and language planning among others.

In summary, Wüster paved the way for future terminology research allowing for the development of the discipline as we will see in chapter 5. Since Wüster proposed the first basic principles and methods of terminology, the discipline has grown significantly in Europe and the Americas; the debate around the reception of Wüster's work has opened the door to the growth of terminology research. Wüster continued to be followed as a solid guide in terminological debates. The sense of reception distinguished in this study refers to the comprehensive influence exerted by Wüster on terminologists from his own time, and on those throughout the twentieth century. We shall argue below that Wüster's work and its reception translate into a series of recognizable periods. In what follows, we will concentrate on periodizing and describing how Wüster's work was received.

2.2   Preliminaries to the Reception of Eugen Wüster Work

Eugen Wüster's ideas flow like a subterranean river through all of modern terminology. The account of the reception of Wüster's ideas in Europe and the Americas is thus an important and often revealing aspect of the evolution and development of the discipline. Wüster's theoretical work on terminology has retained its originality and significance ever since his first writings appeared in the 1930s, almost 80 years ago, and yet, at the same time, it has evolved over this time.

This section provides, for the very first and only time, a rough timeline of the development of the reception of Wüster's work. The timeline, a representation of key events between 1930 and 2009, which consists of the main characteristics of the reception of Wüster's work, is designed to help distinguish the different periods for the reception of Wüster's work. For this purpose, we have established historical periods of criticism of his work. It is a general synopsis of the examination of positive and negative judgments of Wüster's work. The main purpose of the timeline is to show how the interpretation of Wüster's work developed historically, it will be arranged chronologically and each period will be accompanied by a short description identifying its main characteristics.

2.2.1 Elements for a Periodization

Reference to Wüster's work is usually limited to the past thirty years. However, its reception goes back much further; all the way back to the 1930s. Therefore, the timeline of the reception of Wüster's work has been organised into four periods for easier visualization. There are reasons justifying this periodization. During the first period, from 1930 to 1979, Wüster was still alive and could have even reacted to criticisms to his work. Two publications can be used to mark the start and the end of the first period. The publication of Wüster's doctoral dissertation (1931) marks the start and the publication of the general theory of terminology (1979) marks the end. The lapse between these two publications makes it possible to analyze reception during his life. The publication of the general theory of terminology (1979) marks the start of the posthumous reception. By 1980, the first reactions to the general theory of terminology were circulating, as can be seen in Bühler (1980) and Felber (1982b) among others. In the early 1990s, we find the first negative reactions to the general theory of terminology in Guespin, (1990), Gambier, (1991b) and Slodzian, (1995). This date also marks the birth of theoretical approaches to terminology (e.g. Gaudin, 1990, 1993b; Condamines, 1995; Temmerman, 1997a; Cabré, 1999c; Diki-Kidiri, 2000a). By 2000, the wave of criticisms was still in place and terminology approaches were still developing. At this time reactions in defense to attacks on Wüster's work started to take form (see Antia, 2001; Budin, 2001, 2007; Antia, 2002; Candel, 2004, 2007; Humbley, 2004, 2007; Laurén & Picht, 2006).

Based on the elements mentioned above, the first period (1930 to 1979) characterizes reception during Wüster's lifetime, illustrated by unconditional reception. The second period (1980 to 1989) is a decade that captures early posthumous reception. The third period (1990 to 1999) depicts dissenting reception. Finally, the fourth period (2000 to 2009) represents irregular recognition (see Table 4). The second, third and fourth periods, which cover the reception of Wüster's work after his death, will receive special treatment in chapter 4 since we will concentrate on the reception of Wüster's work in a corpus of 166 academic journal articles, published after his general theory of terminology in 1979. The periods are working divisions for the reception of Wüster's work used as a framework of analysis. Such a

framework involves grouping together diverse reactions to Wüster's work on the basis of positive and negative criticisms which have temporal limits.

2.2.2 Timeline on the Reception of Wüster's Work

The history of the reception of Wüster's work has not been a topic of much discussion in the field of terminology because few works have been found (e.g. Humbley, 2004, 2007). Nevertheless, Wüster has always been taken into consideration in the scientific world. With his work, he had an impact on his readers, even if he was not widely, nor frequently, reviewed. Also, we do not pretend to have found every review ever written on any particular work by Wüster. This would have been the easiest, yet more superficial, measure and approach to analyzing the reception of Wüster's scientific work.

Below is a brief timeline highlighting some of the major occurrences over the past 80 years that have shaped the reception of Wüster's work. The timeline is used to simplify long explanations, to highlight the characteristics of each period and the differences between them, to help readers with a visual approach, and to encourage awareness of how influential Wüster's work was to the development of terminology.

In the timeline represented in Table 4, we have differentiated four periods so as to gain a better understanding of how Wüster's work has been received and interpreted. By reading about the different perspectives, we have gained understanding of the diverse way scholars have reacted.

Table 4. Timeline of the Reception of Wüster's Work in Europe and the Americas

Timeline Reception of Wüster's Work in Europe and the Americas	
1930 to 1979	**Period 1. The Lifetime Reactions** • Wüster's work received, read and translated • Development of the fundamentals of the general theory of terminology
1980 to 1989	**Period 2. The Early Posthumous Reception** • Dissemination of the general theory of terminology • First reports on the application of Wüster's ideas
1990 to 1999	**Period 3. The Dissenting Reception** • Explosion of negative criticisms • Birth of new theoretical approaches to terminology such as socioterminology, textual terminology, communicative theory of terminology, sociocognitive theory of terminology and cultural terminology (see chapter 3). • Centenary of Eugen Wüster's Birth
2000 to 2009	**Period 4. The Irregular Recognition** • Considerable increase of critical publications as an immediate reaction to negative criticisms • Academic meetings and publications encouraging the understanding of Wüster's work

2.3   The Lifetime Reactions (1930 to 1979)

During Wüster's lifetime, his work was received, translated and read with relatively great interest in most countries in Europe and the Americas. Wüster was a pioneer and interest in his work, at an early stage, gradually led to establishing settings, or guidelines, for terminology. It also helped stimulate a popular interest in planned languages and standardization. As we have seen, his writings and personal labor was positively received by international organizations. The first reactions to his work deal with the early stages in terminological standardization.

2.3.1 Standardization and International Communication

The years from 1930 to 1979 saw an opportunity for, and consequently the emergence of, international communication thanks to the industrial revolution (section 1.1.4). Several

institutions, created between 1945 and 1955, such as UNESCO, the United Nations and the International Federation of Translators (FIT), were created in order to promote, from many significant perspectives, translation, publication and the dissemination of knowledge. Numerous proposals and projects came into being, for instance, the creation and publication of scientific and technical dictionaries (see Holmstrom, 1950, 1951a, 1951b, 1952, 1959; UNESCO, 1957) and the founding of translation journals such as *Babel* in 1955, which is published by the FIT. The time was ripe for Wüster's ideas (see Jumpelt, 1955).

When the objective of international communication is the exchange of information across national borders, standardization proves to be very effective. With the increase in knowledge dissemination, standardization became an increasingly important factor in many branches of technology. Eventually barriers to communication had to be solved through either an agreed in-house vocabulary or an international technical terminology. Here, we shall take the liberty to quote Wüster's ideas on standardization *in extenso*:

> what is meant by standardizing technical language is standardizing the technical terms that are used in technology. Essentially there is no difference between doing this and doing the same for the special terms that are current in other branches of knowledge; […] 'to standardize' means to discuss and to agree upon the general adoption of what is best among alternative possibilities and arrangements. […] it is just in respect of technical terms that the necessity exists for standardization. The reason for this is that technical communication requires much greater precision that does popular discussion; and such standardization is needed most of all in technology because, in that field, thousands of new concepts emerge every year on which names are bestowed from all sides. (Wüster, 1955b, p. 1)

In Wüster's view, the process of international communication is not seen as a type of polarity between subject fields and approaches but rather standardization is a high-quality tool to solve international communication issues and to transfer specialized knowledge.

2.3.2 Reviewing Wüster's Work

Although Wüster's contribution to modern terminology is rich, very few reviews of his work, written in English, French or Spanish, are to be found in the bibliography. To date, we can only account for one review of an article and several reviews of three of his books. The

article "La Normalisation du langage technique," originally written in German in 1955, and translated into English the same year and into French in 1959, was reviewed by Chonez (1959). The reviewer gives a concise description of the ideas underlining Wüster's standardization efforts through the ISO standards and the support of UNESCO.

Both volumes of Wüster's *Bibliography of Monolingual Scientific and Technical Glossaries* (1955a, 1959b) were criticised. Two reviews have been found for Volume 1. Positive remarks are found in the journal *Ecology* where Egler (1956) emphasises the quality of the work on two levels. Indirectly, the bibliography provides reference to glossaries in all fields of science. Directly, it raises awareness of the need to establish a glossary for Ecology as a scientific field, for it has a "reputation for terminologic complexity and redundancy" (Egler, 1956, p. 406). On the contrary, there is a negative review by Glass in *The Quarterly Review of Biology* (see Glass, 1957). Glass criticises the fact that the bibliography lists very few references of a biological nature. The reviewer blamed this on the use of the Universal Decimal Classification system used by Wüster because this system did not include biology in its classification.

For Volume 2 of the *Bibliography* (1959b), there are also two reviews. Mayer (1959) thanks Wüster for this publication finding in it part of the solution to the problem Dr. Holmstrom commented in 1957 on the lack of scientific and technical publications and translations. Wüster's different ways of indexing (subject, author, and language) and the place where the glossary might be found were very much appreciated by the reviewer. By the same token, Jumpelt (1960) acknowledges the publication saying it will assist translators in their task and in finding the needed glossary. In 1980, Bernadette Pinta (1980) briefly described the 2nd edition of the *International Bibliography of Standardized Vocabularies* (Wüster, Felber, Krommer-Benz, & Manu, 1979). The review includes a mere description of the work, but does not provide any critical examination.

The Road to Infoterm (1974a) also got two reviews, from Kocourek (1974) and Orne (1976). In reviewing *The road to Infoterm: Two reports prepared on behalf of Unesco*, Kocourek gives a constructive and comprehensive report on the book. He devotes a section to the merits of the two reports by stressing the systematically arranged information, the relevant

facts on terminology standardization, the guide to terminology institutions, organizations, groups and the like, the extracts from important documents, and a history of various terminological projects. He concludes that the book "is a most fortunate outcome of *four fruitful decades* of Professor Wüster's remarkable terminological effort" (Kocourek, 1974, p. 107). Orne also highlights the great effort put into this publication as it provides a detailed account of the past twenty years, of the "organizations, groups and individuals, bibliographies and other reference sources useful for terminological work" (Orne, 1976, p. 449). Orne remarks positively that the book serves as a useful source for "theoretical or philosophical approaches to terminology." However, he stresses that for "practical guidance for solutions to the real problems of creating specific terminologies, its pages provide no answers" (Orne, 1976, p. 450).

During his lifetime, Wüster was given credit for his hard work and multiple activities. In 1958, the journal *Sprachforum* devoted an entire issue, No. 3, to commemorating Wüster's sixtieth birthday. The journal contains a complete bibliography of Wüster's work as well as short reviews, in German, of some of them by L. Weisgerber and F. Lang. The content of this journal is mentioned here, as it will be of great interest to those dealing with the reception of Wüster's work in German. It is also important to mention the work of Kurt Keppler (1960) on the standardization of German scientific and engineering terms. In this article, Keppler acknowledges Wüster's contribution to language standardization, specially his doctoral dissertation. Overall, placing language standardization into the broader discipline of applied linguistics, and not only to German linguistics, is recognized. In addition, German standardization organizations have been leading the drive towards the standardization of scientific terms, and the German theoretical research in this field have obtained important results "due especially to the excellent investigations of Eugen Wüster" (Keppler, 1960, pp. 35, footnote No. 4).

2.3.3 Terminology, Translation and Documentation

In Eugen Wüster's time, terminology and scientific and technical translation were coming together. Translation scholars brought terminology topics into professional training. At UNESCO, during the decade from 1949 to 1959, Holmstrom (1952) proposed the principles

and the working procedures for technical translating. His view was in accordance with Wüster's as he stated that

> the first principle of good technical translating is to translate ideas and not words. When a competent translator sees the word <u>Punktschweissmaschine</u> it should serve to evoke before his mind's eye an image of welding machine, but he should not merely equate these terms in the two languages without visualizing what they represent. (Holmstrom, 1952, p. 1)

In 1959, Holmstrom focuses on three related propositions regarding UNESCO's policy on terminology and translating. The first proposition was "that Unesco ought to give a lead to the world in the promotion of measures for the overcoming of language barriers, especially as regards technical terminology" (Holmstrom, 1959, p. 1). For this purpose, the importance of terminology to scientific and technical translation was that "technical terms are to language what the contents of a builder's yard are to architecture" (p. 2). Consequently, this view of translating needed terminological resources. Among the actions taken by UNESCO was the compilation by Holmstrom, in 1951, of the *Bibliography of Interlingual Scientific and Technical Dictionaries*. In the 1950s, under contract with Wüster, a *Bibliography of Monolingual Scientific and Technical Glossaries* (1955-1959) was published in two volumes.

The reception of Wüster's work by translation scholars should be seen more as contact with existing translation beliefs, ideas and practices than a neat acceptation of Wüster's ideas. At the time, UNESCO was testing plans to solve translation problems. In a report on the meeting of Working Party No. 3 on 'Scientific translation and terminology' (UNESCO, 1964), an international committee for the coordination of terminological activities was approved. Jumpelt (1963) outlined the proposal to establish such a committee with the objective of improving lexicographical coverage. To achieve this, a subcommittee was set up with Wüster as one of its members. One of the goals of the subcommittee, amongst others, was to encourage reviews of terminological publications, to keep records of terminological projects, to disseminate results of terminological research, and to provide information on terminological questions. The objectives were officially approved and Hamel (1964) provided a report on a network of regional and national scientific translations centers which would make translations

more accessible to scientists in all countries, collect information on existing and pending translations, and reduce duplication of efforts.

The preparation work on terminology and translation at UNESCO had an impact on linguistic and translation scholars. This can be seen in the first translation manuals. Mounin (1963) dedicates several pages of chapter 9 to discussing the translation of lexical units and the search for their semantic components. He underlines the contribution of the theory of terminology to the definition of terms (see Mounin, 1963, pp. 127-133). By citing Wüster (1955a, 1959a), Jumpelt (1955) and F. Lang (1958), Mounin (1963) gives approval to Wüster's idea on analyzing definitions before terms and then translating based on definitions instead of equivalent terms as a more appropriate approach to translating. According to Humbley (2004, p. 35) and Van Campenhoudt (in press), in the field of translation, Mounin was the first to cite Wüster's work in a French context. Another translation scholar at the time, Jean Maillot (1969), devoted chapter 20 of his book (pp. 187-195) to terminology and standardization. He acknowledged that terminology was a new, technical and international field. Although he criticized parts of Wüster's doctoral dissertation (1931), he also gave some credit to his work, in chapter 27, "Notes bibliographiques" (pp. 255-256). Maillot (1969, p. 256) provides an annotated bibliography for some of the works he cites. As for Wüster's work, he said that it is the most representative in the field of terminology. He admits that Wüster's work has called the world's attention to terminology studies and has played a predominant role in modern terminology. On the negative side, Maillot states that Wüster's doctoral dissertation was already dated and that some of its chapters only serve as historical references. Maillot did not like the fact that Wüster was more of an engineer than a linguist, that his knowledge of foreign languages was poor, that he confused homonymy and polysemy, and that he had a phobia of natural languages and as he chose to learn Esperanto at the age of 15.

2.3.4 Terminological Data Banks

In the middle of the 1960s, the language divisions of large organisations and companies started to develop mainframe databases for terminology management such as in TEAM at Siemens; LEXIS at Bundessprachenamt; and EURODICAUTOM at the European Commission. Among Wüster's recognition in this area is *The Machine Tool* dictionary

(1968b). Wüster elaborated this systematic dictionary in order to confirm the basic principles of terminology. Thus, with this publication, he set the framework for working methods and principles in terminology, with the aim of standardizing scientific language. The European Commission agreed to build a term data bank with the terminological data contained in Wüster's dictionary (see Felber et al., 1986; Goffin, 1997). Terminological data (entry term, equivalents, definitions, contexts, sources and subject fields) were used for input in the pioneering terminology database EURODICAUTOM created in 1975. In 2007, EURODICAUTOM was replaced by Inter-Active Terminology for Europe (IATE) as previously stated.

2.3.5 The Recognition of Modern Terminology

During the last decade of Wüster's life (1969 to 1977), the reception of his work covered a wider range. It was a decade for the establishment of terminological methods and principles and the social institutionalization of terminology. The 1970s was a rich period in several respects, beyond the obvious terminological research. The reception of Wüster's work deals with important events. First, the foundation of Infoterm in 1971; second, Wüster's German article on the general theory of terminology in 1974; third, the publication of *The Road to Infoterm* in 1974; fourth, Wüster's death in 1977; fifth, the posthumous publication on the general theory of terminology, *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* in 1979, and finally, the increasing influence of terminology studies in some countries.

Indirectly, the reception of Wüster's activities can be seen in a report written by the UNISIST Steering Committee, UNESCO (1976) that assesses the work done by Infoterm. The Committee gave a very positive assessment of Infoterm activities. It was impressed by the extent and adaptability of the tasks in hand: "The meeting was unanimous that Infoterm had fully justified its establishment and that in many of the tasks specified in its terms of reference it had exceeded expectations. It created a sound infrastructure for its services which was still being consolidated" (UNESCO, 1976, p. 7).

Felber (1973) published an article in which Wüster was recognized as one of the pioneers of terminology. Two articles, Felber (1977) and Lurquin (1979), *In Memoriam*, were written after Wüster's death. They look at Wüster's intellectual development and links to his life, personality and academic achievements. Some two years after, the book *Terminologie als angewandte Sprachwissenschaft: Gedenkschrift für Univ.-Prof. Dr. Eugen Wüster* was published and dedicated to Wüster (see Felber, F. Lang, & Wersig, 1979). Most of the articles are written in German. In this book, A. Lang, F. Lang and Reiter (1979) compiled a very complete bibliography of Wüster's work and Sager (1979) wrote an article on the training in terminology.

Wüster's work gained some recognition in America in the 1970s. It was only in 1975, when Wüster traveled to Canada, that he became better known in that his appearance and his persona became familiar to the Canadian public. However, there would have been no great attention paid to Wüster if his theory had not stimulated such a clamour in the first place. Several of Wüster's publications in German were already known and cited at the Quatrième Colloque International de Terminologie (see Auger, 1976). At this colloquium, Wüster presented a French extract of his article on the general theory of terminology previously published in German in 1974, in the journal *Linguistics*. The proceedings of the colloquium were published in 1976, as *Essai de définition de la terminologie. Actes du colloque international de terminologie* (Dupuis, 1976). Wüster's presentation appears to have been well received since in the only foot note of his article it is stated that "une traduction française de l'article complet est en préparation" (Wüster, 1976a, p. 49). The German article (Wüster, 1974b) was then completely translated into French and published in *Textes choisis de terminologie* (see Wüster, 1981).

Although we have not found any book review of *The Machine Tool,* (1968b), in English, French or Spanish, the publisher acknowledges its positive reception. The publisher points out that the value of Wüster's doctoral dissertation was "acclaimed by leading figures in the fields of linguistic research and technology in Germany, Austria, Switzerland, Great Britain, France, Italy and the Soviet Union" (p. x). More importantly, *The Machine Tool* dictionary is organised on the principle stated in Wüster's doctoral dissertation, that "the

ordinary kind of alphabetically-arranged dictionary is greatly inferior to one which sets out *systems of terms in accordance with their conceptual interrelationship*" (p. x).

We have seen that there was, in fact, a good degree of interest paid to Wüster's work in Europe during his lifetime. His work certainly was known within the European and American (North and South) terminology community. Wüster was clearly known and his works were at times discussed. However, to our knowledge, there is not much evidence of much leading reaction to his work during his lifetime. One can only speculate on the reasons for this, but they may lie in the language in which his work was disseminated.

In short, the chronology of the reception of Wüster's work is a periodization that focuses on the various ways in which Wüster's work was interpreted, defended or criticized in the modern world. Its reception was divided into four periods, the first focusing on its reception during Wüster's life and the other three on its posthumous reception. Having offered a historical overview of Wüster's reception, we will now concentrate on the last three decades. They cover early posthumous responses (a decade of silence); critical revisions in the later twentieth century (a decade of critical reception), finally, more recent work on issues of recognition (a decade of replies to criticisms).

2.4   Early Posthumous Reception (1980 to 1989)

Eugen Wüster's final years were taken up with setting down on paper the methodology and the principles of terminology work, but a deadly illness prevented him from finishing the work that is now known to scholars as the general theory of terminology. Since his death, and even before, Wüster has been known as the pioneer of modern terminology and has gained posthumous recognition as the "father of modern terminology." Although he was not concerned with his posthumous reception, his followers began to frame the reception in terms of an ideal dissemination of his work and ideas. In general, we will deal with the early posthumous reactions to his work, and specifically, we will share the comments made in his memory, the dissemination of his work, the implied reception, the observations on terminology standardization and its first applications.

2.4.1 *In Memoriam*

Most of the positive reception for Wüster's work came right after his death. Wüster's ideas on terminology and language as a tool of communication were a response to a changing world – a world in which a growing need for international understanding was pressing. Wüster's firsthand experience of this led him to propose the general principles of terminology, and as such was a significant influence in the advancement of modern terminology. The many disciplines in which he operated constitute a legacy, of sorts, of how the world views scientific language and how scientific language describes the world. Felber (1980a) describes how Wüster contributed to disciplines such as terminology, classification and documentation, standardization, standardization of terminological principles, lexicography, library documentation, planned languages and German orthography. As part of Wüster's legacy, the commemorative volume *Terminologie als angewandte Sprachwissenschaft: Gedenkschrift für Univ.-Prof. Dr. Eugen Wüster* (Felber et al., 1979), reviewed by Arntz (1981b), shows that it was intended to offer "help in orienting the coming generations of terminologists and translators, technical-language researchers, developers of artificial languages and standardization authorities" (p. 168). Wüster's main legacy was to contribute to secure an unambiguous international communication.

Wüster's legacy, as reported by Seipelt (1982) and Bühler (1982a), is seen in his research library, private research center which has been described as a focal point of international terminology work. The research project 3938, "a project to investigate, evaluate and make accessible the unfinished papers and draft manuscripts in the field of Terminology and related fields left by Wüster" (Bühler, 1982a, p. 97) was based on Wüster's own publications, manuscripts and drafts found in his private research center. The project ended in 1982 with a four-volume Final Report written in German. However, some national and international conferences and publications related to this project were presented in English (see Bühler, 1982a, 1982b; Seipelt, 1982). Bühler (1982a) states that the dissemination of Wüster's ideas calls for an edition of the 'Collected Works of Eugen Wüster' and that translations of his papers and books from German would be in line with Wüster's intentions. What follows is a brief account of the dissemination of Wüster's work detailing how it came to be known.

2.4.2 Dissemination of Wüster's Work

In the 1980s, concern was primarily focused on the establishment and dissemination of his theory and its methodological foundation. That is why in the late 1970s, during the First European Symposium on Language for Special Purposes (LSP) held in Vienna, in August 1977, it was recommended that knowledge on the general theory of terminology be disseminated. The two proposed measures were, first, the teaching of the general theory of terminology to students at universities and professionals concerned with terminology work and, second, the publication of an introduction to the general theory of terminology. The publication should provide a general view for students and serve as a reference book for those involved in practical work as pointed out by the Vienna Working Groups (1978, p. 5) and Felber (1978b, p. 41). Within this dissemination project, several objectives were defined: First, to teach the general theory of terminology "as widely as possible," "on the international and national level"; second, to set up seminars, on a permanent basis, on the application of the general theory of terminology; third, to propose Vienna as an appropriate place for the seminars; and finally, to prepare the publication "in as many languages as possible, by a panel of experts" (Vienna Working Groups, 1978, p. 6).

In relation to the above mentioned measures and as reported on Infoterm News (1979a) and outlined by Felber (1980d, 1983b), TermNet projects comprised three programs. Program 1 deals with the development of the basis of terminology work, specifically the general theory of terminology. Program 2 involves the development of closer co-operation in terminology work. Program 3 consists of the development of a network for terminology documentation and information.

> Programme 1 has previously been envisaged, as it is considered important to provide a solid basis for training in terminology. Infoterm reported that the lecture series of the late Professor Wüster had been published, and that French and English versions were being prepared in Canada by the General directorate for Terminology and Documentation (DGTD) in Ottawa and would be available shortly. (Infoterm News, 1979a, p. 124)

Basically, the dissemination of Wüster's work was the main goal of program 1.

According to Infoterm News (1979b, p. 182), TermNet programs were approved by the Infoterm Advisory Board on April 4, 1979. After the approval, Infoterm and other TermNet partners undertook initiatives and measures to promote theoretical work. They decided to adapt and publish the lectures Wüster's gave at the University of Vienna between 1972 and 1974. They effectively issued, in 1979, Wüster's *Einführung in die Allgemeine Terminologielehre und terminologische Lexikographie [Introduction to the General Theory of Terminology and Terminological Lexicography]*. Copies of the book were made accessible to interested parties and translations were planned for several languages. According to Felber (1980c, p. 142), by 1980, translations were still being prepared. They also prepared and planned the publication of a series with the name *Selected Readings in Terminology/Textes choisis de terminologie*, edited by G. Rondeau and H. Felber. Among their immediate objectives was the preparation of an "International Symposium on Theoretical and Methodological Problems on Terminology" to be held in Moscow in 1979, and the publication of a memorial volume for Prof. Dr. Eugen Wüster entitled *Terminologie als angewandte Sprachwissenschaft* [Terminology – Applied Linguistics]. The volume was edited by Felber, F. Lang, and Wersig and published in 1979. Other projects deal with further research into Wüster's unfinished projects and the co-editing of a new international journal for Language for Special Purposes (LSP) (Infoterm News, 1979b, p. 182).

In accordance with international cooperation in terminology, Felber (1980c, p. 142) gave details of the development of TermNet Programme 1. For the training project, efforts were brought together to prepare material for the teaching of terminology. The Groupe interdisciplinaire de recherche scientifique et appliquée en terminologie (GIRSTERM), in collaboration with Infoterm, agreed to prepare six volumes of selected readings in terminology. Volume 1, *Theoretical Foundations of Terminology Work*, edited by Siforov, Rondeau and Felber, 1981, was the first and the only volume published. The other volumes never saw the light, probably due to Rondeau's early death.

After the dissemination of the general theory of terminology, Wüster's theory was supposed to be widely discussed and criticized. Today, its implications are still being carefully examined. The theory made a strong impression on the public, and accordingly, a great interest

developed for the person said to be the creator of the idea. Wüster's personal fame was thus, largely, based on the perception of his work and theory.

2.4.3 Implied Reception though not Directly Expressed

After Wüster's death, his ideas on the general theory of terminology came to be known as the classical theory of terminology. When these ideas first appeared, they were more systematic than any previous proposal (e.g., paying much more attention to standardization and in particular to practical applications). They were also innovative in several methodological and conceptual details (e.g., in centering terminology work on concepts rather than terms, and on the central role of definition).

Since the very beginning, the general theory of terminology has been regarded as a provocative theory, and it is thus used as an introduction to much work in terminology. Unfortunately, this body of work, as a whole, has undergone very few in-depth studies (e.g. Candel, 2004, 2007; Humbley, 2007). During the 1980s, regardless of the efforts to disseminate the theory, access became an early problem due to language. And even today, there is not an official translation of *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* in English or French (Wüster, 1985b, 1985c). In this sense, Wüster was known and read indirectly through his work at UNESCO, Infoterm and Felber's work. Given Wüster's immense authority at the time and his reputation as the father of modern terminology, it is not surprising that devoted readers would try to gain access to whatever his work was available in languages other than German. The availability of Wüster's texts is a key concept that should be kept in mind in the analysis of all reception periods.

Probably the most influential publication in shaping Wüster's early posthumous reception was the translation of his article on the general theory of terminology (Wüster, 1974b), which is probably one of his most cited articles (see chapter 4). Among the topics with which it deals are questions arising from the context in which much of his writings and the various ways in which authors all across Europe and the Americas coped with the specific terminological problems of the day. In 1980s, the overall structure of Wüster's reception thus reflects the typical acceptance approach, implied though not directly expressed. Two types of

early responses to the general theory are identified in this decade. One type establishes the foundations of the theory and the other works on practical applications in other countries and languages. The first category includes works on the general theory and on standardization, while in the second category one finds the first steps in terminology in other countries and the appearance of the first terminology manuals.

2.4.4 Foundations of Terminology and Standardization

The reception of Wüster's work could not have begun before there were published texts to receive and react to; and such work, in languages other than German, were not available until the 1980s (see Wüster, 1979b, 1979c, 1981, 1982, 1985b, 1985c). Several of these fundamentals of terminology developed during the decade, forming and defining a flow in Wüster's ideas. These publications helped determine which of Wüster's ideas became more accessible, by whom, and in what way. In turn, their content was determined, to a significant extent, by the acceptance of the theory at the time of publication. In Galinski's words, "the theoretical foundation of terminology is very important for the development of principles and methods for terminology and terminography. Without appropriate foundations no progress in terminology can be expected" (Galinski, 1982, p. 107).

The response to the posthumous publication of Wüster's general theory of terminology (1979a) was not immediate, nor controversial. The first person to present a series of articles on the reception, and therefore the foundations, of the general theory of terminology was Felber (1981) with his article "The Vienna School of Terminology Fundamentals and its Theory." Others in the same line followed (see Felber, 1982a, 1982b, 1983c). The second person was Bühler (1980, 1982b). She concentrated his efforts on showing the practical applications of the general theory for translation studies, as did Arntz (1981a) and Galinski (1988). Nedobity (1983) explained the practical basis of the preparation of classified defining dictionaries. Finally, Eisenwort (1982) and Cellerino (1992) remark on certain foundational considerations in the general theory of terminology.

As already described in chapter 1, section 1.1.4, the ISO's interest in Wüster's ideas on standardization was a sign of the warm reception of his work. Since the 1930s, Wüster's

doctoral dissertation on standardization of terminology has been considered a pioneering work on the topic. Among the reactions to Wüster's work during the 1980s, we must mention Felber (1980b) who states that the general theory of terminology is the theoretical background for the standardization of terminological principles. The proposal for unambiguous international communication was also well received by Johnson and Sager (1980) who confirmed that "standardization is not an aim in itself but is merely a device to facilitate communication" (p. 100).

It seems that the international unification of concepts and terms, Wüster's groundwork for standardization, went unnoticed in organisations working on standards in the United States. That is why the purpose of Strehlow (1988), in his book *Standardization of Technical Terminology: Principles and Practices*, was to develop awareness of the importance of terminology for technical standards in the American Society for Testing and Materials (ASTM). In this sense, Ellis explains that "in the United States this work [the pioneering work of Wüster carried on by Felber in Austria] is little known or ignored in consensus standards organizations" (Ellis, 1988, p. 62).

By 1970, Canada had witnessed an increased number of linguistic issues as a consequence of the *Official Languages Act* which was enacted in 1969. This Act makes English and French a fundamental characteristic of Canadian identity (see Office of the Commissioner of Official Languages, 2010). In 1977, the National Assembly of Québec tried to reinforce the French language among Quebecers with the *Charte de la Langue Française*, also known as the *Bill 101*. The *Bill 101* resolved "to make of French the language of Government and the Law, as well as the normal and everyday language of work, instruction, communication, commerce and business." With this motivation, there was a drive to translate texts and unify terminology within Francization programs. For this purpose, the Groupe interdisciplinaire de recherche scientifique et appliquée en terminologie (GIRSTERM) at Université Laval coordinated the Canadian symposium on general guiding principles for the harmonization of terminological research, documentation and standardization (see GIRSTERM, 1976).

Thus far, neither Rousseau (1981) nor Auger (1982) has mentioned any of Wüster's publications when describing terminology standardization at the Office de la langue française (OLF), even though, in terminology manuals, Wüster's work is more visible as will be seen in section 2.4.5.2. Indeed, it appears that the basis for developing a methodology for terminological lexicography was being prepared based on certain ISO recommendations which, as we have already mentioned, were prepared by Wüster (e.g. Duquet Picard, 1985, p. 185), as well as on Wüster's lexicographical notes for *The Machine Tool* (e.g. Duquet Picard, 1984, p. 146). These may be clues that Wüster's work on standardization was at least taken into account in this part of the world. In the same way, in Europe, Wüster's ideas on standardization were welcomed in the field of energy economy (see Bauer, 1985). A model for international co-operation in the field of energy was created in combination with the Austrian Standards Institute and the World Energy Conference. The main endeavor was to standardize energy terminology for the benefit of science and practice.

2.4.5 Initial Applications and First Terminology Manuals

The dissemination of terminology documentation and of the general theory of terminology was a complete success in the sense that it led to an interest in terminology research in many countries around the world. This is the main reason why we have included this specific section. The openness towards the topic of terminology reveals two horizons in the reception of Wüster's ideas. The first horizon is the reception of Wüster's ideas abroad, beyond his original place, time, language and context. Terminology activities around the world increased, among other specific linguistic reasons, because of TermNet programs on the dissemination, development and cooperation of terminology (see Felber, 1974a; Felber, 1980c, 1983b). The second refers to responses in terminology manuals. We consider manuals important in the reception of Wüster's work because they are used for training new generations of terminologists. Wüster dedicated a part of his life to teaching terminology. Wüster's *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (1979a) is considered a handbook that has guided terminology work. Therefore, we hope to find references to this pioneering work in the field.

2.4.5.1 Terminology around the World

It goes without questions that large audience in the world appreciated terminology research at the time. One of the main characteristics of this decade was the proliferation of terminological activities in other countries. A brief glance at research reports on different stages in terminology in different countries confirms this fact. By taking some terminology research from different countries into consideration, we will give a general overview of the first steps in the reception of Wüster's work between 1980 and 1989. For this decade, we will focus on five reports that illustrate the development of terminological activities in different countries (e.g. Picht, 1981; Criado de Val, 1982; Fedor de Diego & Boroni de Sánchez-Vegas, 1984; Auger, 1988; Ellis, 1988). Reports from other countries, such as South Africa, Czech Republic and Russia (e.g. Cluver, 1980; Drozd & Roudny, 1980; Volkova, 1981) offer their respective insights into the reception of terminological work, but they will not be considered in this doctoral dissertation due to the geographical delimitation already established for this research.

In Europe, after Wüster's death, his colleagues rushed to publish in order to promote his ideas. It was now time to exchange new experiences in terminological activities. Wüster's work reached Nordic countries where his ideas were positively received. At this time, projects were carried out in collaboration with Infoterm. According to Picht, it was too early to talk about theoretical foundations, but he stated that "nearly all serious terminological efforts – with corresponding adaptations, of course, – are on the ideas of Wüster" (Picht, 1981, p. 248).

With the foundation of the Centro de Terminología Científica y Técnica del Español (HISPANOTERM) in Spain, in 1978, several projects and the coordination of terminological activities started, in collaboration with the Association française de terminologie (AFTERM), then with Infoterm (see Criado de Val, 1982). Terminology trainers reached Wüster's ideas through the publication of *Métodos de Terminografía y Principios de Investigación Terminológica* in 1984, by Helmut Felber and Heribert Picht.

Although reception in North America was promising, at least in Quebec, Canada, Wüster's ideas only gained popularity slowly on the rest of the continent. His work was, in a certain way, present, but not actively considered. Wüster's pioneering work, carried on by

Felber in Austria and by the activities of INFOTERM, established principles of terminology practice and management that are well accepted in worldwide terminology circles with the exception of the United States where Wüster's work was not popular in organisations working on standards. As Ellis pointed out (1988, p. 62), the American Society for Testing and Materials (ASTM) ought to have used the principles and practices of technical terminology to manage the development and maintenance of special vocabularies specific to ASTM technical committees. The author concludes that the use of terminology principles and practices would result in a coherent and efficient application of terminologies.

Turning now to Quebec, Canada, on the one hand, Auger (1988) states that modern terminology reached Quebec, Canada, in the 1970s (see also Dupuis, 1976). "Le premier courant qualifié de linguistico-terminologique représente le 'noyau dur' du développement de la terminologie moderne" (Auger, 1988, p. 48). The influence of this approach has been significant for Quebec's 'courant terminologique aménagiste' as Auger points out. During this decade, although Wüster's model did not prove to be a total success in the Quebec terminology situation, Wüster's work found a positive reception and was read, analyzed, disseminated and even translated. At this point in time, it is appropriate to cite L'Homme (2006b, p. 67) who explains that apart from the the lexico-semantic approach, the general theory of terminology is the basis of most Canadian approaches to terminology, for example, "1. in most terminological projects, the approach taken is partly onomasiological, or 2. semasiological (in the lexico-semantic approach)." This means that terminologists start from a text to identify terminological units that are then analyzed both in their form and content (concept). Likewise, "human intervention (standardization): can be a part of terminological analysis (at the Translation Bureau, the OQLF, and other translation firms) or not (research groups)" (L'Homme, 2006b, p. 67). Accordingly, though differing in their purposes, the Translation Bureau and the OQLF have based their terminology research on a concept-based approach. On the one hand, the Government of Canada's terminology and linguistic data bank (TERMIUM) records terminological entries following the principles that govern terminology research (see Pavel & Nolet, 2001). This manual is complemented by the on-line *Pavel Terminology Tutorial.* The tutorial focuses on terminology standardization and the onomasiological approach is the guiding principle as stated in section 2.1.2. of the Guiding Principles of Terminology Research

(Translation Bureau/Bureau de la traduction, n.d). On the other hand, the *Grand Dictionnaire Terminologique* (GDT), the terminology data bank of the Government of Quebec, also has a prescriptive approach in that one term is preferred over another. This may be better understood within the concept of "officialisation"; a linguistic strategy to promote specific language usage (see Office québécois de la langue française, 2004).

Through the Infoterm program on the dissemination of terminology, South America experienced an indirect consequence of the discipline that could be considered a very new field of research. The reception of Wüster's ideas in Spanish America can be traced in the Proceedings of the Simposios Iberoamericanos de Terminología programmed by the Red Iberoameriana de Terminología (RITerm). These seminars are of special interest since RITerm, starting in 1988, has been performing a leading role in terminology in this part of the world. Nonetheless, the first contact with the principles of terminology, as stated by Wüster, can be traced back to 1981, as Kesselman (1981) reported at the International Colloquy called "Special Language Research and Theory, Focus: Spanish," held in Saarbrücken in 1980.

In South America, the development of terminology has been promoted by the indirect reception or voluntary adoption of the general principles of terminology. At the time, Wüster's ideas, especially those on the general theory of terminology, were practically unknown in South America. The first steps in the reception of Wüster's ideas in South America can be seen in Venezuela. According to Fedor de Diego (2000), the first course in terminology was taught at the Universidad Simón Bolívar in 1985. The course was the result of the "Primer Seminario Nacional de Terminología," held in 1983, which was organized by the Grupo de Investigación Terminológica (GIT) at the Department of Languages at the same university. The proceedings were then published in 1984 (see Fedor de Diego & Boroni de Sánchez-Vegas, 1984). Members of the group had already "initiated into terminology theory and work during short training periods at Infoterm" (Infoterm News, 1982, p. 102). Heribert Picht, Jean-Claude Boulanger, and Monique Héroux were the instructors at the congress. The interest the students demonstrated during the course inspired and motivated the GIT to organize the First Latin American Symposium on Terminology in 1988, which in its second edition was re-baptized the Iberoamerican Symposium on Terminology (see Fedor de Diego & Boroni de Sánchez-Vegas,

1988). Today it is the scientific forum *par excellence* for the discipline in Hispanic America. At this time, Christian Galinski, Magdalena Krommer-Benz, Wolfgang Nedobity from Infoterm and María Teresa Cabré from the Centro de Terminología de la Lengua Catalana (TERMCAT) were among the international experts presenting at the seminar, which was the first seminar in Venezuela and all South America. For the first time, those interested in the topic met to discuss terminology, a little known discipline on the continent. The principal objective of the event was to disseminate the methodology and the principles of terminology so that research activities could be carried out. There were contributions from European and Canadian experts in the field. The second objective was to try to solve the problem of isolation amongst terminology researchers and to make contacts for future projects.

2.4.5.2 Reception of Wüster's Work in Terminology Manuals

A cursory analysis of terminology manuals published between 1980 and 1989, suggests that the influence of Wüster's general theory of terminology was not strongly felt despite the efforts of TermNet programmes in the training of new terminologists. This can be seen in the first terminology manuals, which were published at that time and prepared as reference books for teaching, providing specific information on terminology. At the beginning of the 1980s, teaching materials, especially textbooks, were sorely missing (see Sager, 1979; Picht, 1982; Picht & Acuña-Partal, 1997). Apart from Wüster's lectures (1979a), just two other works had already appeared at the time: *Manuel Pratique de Terminologie* (Dubuc, 1978) and *La Terminologie. Noms et Notions* (Rey, 1979). *Méthodologie de la recherche terminologique* (Auger & Rousseau, 1978) was a guide designed primarily to standardize terminology practice and methodology at the Office québécois de la langue française. Actually, the need for this kind of material was first noticed in French, before any other language, with the common characteristic of not referring to any of Wüster's work; Rey (1979) being the exception. Reasons to ignore Wüster's work are varied and may include, but not be limited to, first, time constraints as they were published almost at the same time of Wüster's, or, second, the lack of knowledge of German since German works were not cited.

By the 1980s, some other textbooks and guides appeared in various languages:

1. Rondeau (1981), *Introduction à la terminologie*
2. Felber and Picht (1984), *Métodos de Terminografía y Principios de Investigación Terminológica*
3. Célestin, Godbout and Vachon-L'Heureux (1984), *Méthodologie de la Recherche Terminologique Ponctuelle: Essai de Définition*
4. Felber (1984), *Terminology Manual*
5. Picht and Draskau (1985) *Terminology: An Introduction* reviewed by Brons (1986)
6. Felber (1987), *Manuel de Terminologie*

Even though these books are all different from each other, they share certain common characteristics. Conceived and developed to guide practical and systematic terminology work, they concentrate on principles and methods of terminology. Clearly, Wüster's ideas were very well reflected in Felber and Picht (1984), as well as in Felber (1984) and Picht and Draskau (1985). It was explicitly stated that their research was based on the basic ideas laid down by Wüster. It is interesting how Dahlberg (1985, pp. 45-46), in reviewing Felber's *Terminology Manual*, disagrees with the main part of his book as it "is purely based on Wüster's philosophy of concepts and their relationships" and how he acknowledges "the long needed terminology manual in the English language." Although the following book is not part of the references studied in this doctoral dissertation, it is important to mention *Terminologie in Theorie und Praxis*, a German textbook by Felber and Budin (1989). Analyzed and compared to Felber's (1984), Humbley was expected to find an improved version of the previous textbooks, but he had to conclude that "si la présentation sous tous ses aspects, matérielle d'abord en qualité d'imprimerie mais surtout en contenu, est sensiblement améliorée, le fond reste très proche des publications antérieures" (Humbley, 1989b, p. 135).

In any case, in the above mentioned textbooks, Wüster's presence was minimal. The books by Rondeau (1981) and Célestin, Godbout and Vachon-L'Heureux (1984) incorporate to some extent Wüster's background ideas on systematic terminology and the ISO/TC37 recommendations. One of Rondeau's critiques of Wüster is the onomasiological approach to terminology work in the hard sciences that cannot be directly applied to other disciplines. For

this statement, we can cite Arntz (1985, p. 44). Arntz reveals that the goal of the fundamental theoretical and practical work on terminology in the department of the Copenhagen School of Economics and Business Administration is to develop Wüster's method so that it can also be applied to the terminology of nontechnical fields, e.g. law, economics and the social sciences.

Other books that have pedagogical purposes and that were published during the 1990s and 2000s will not be treated here because, despite the fact that they mention some of Wüster's work, they add little information to the understanding of the reception of Wüster's work. These books are: Gouadec (1990), Arntz & Picht (1995), Fedor de Diego (1995), Cabré (1998), the Spanish translation of *Einführung in die Terminologiearbeit* (1998) and L'Homme (2004).

During the 1980s, with the dissemination of the general theory of terminology, research in terminology started to spread around the world. As a consequence, the reception of Wüster's work in Austria was exclusively guided by Infoterm. Earlier Austrian traditions prevailed in most parts of the world. Wüster's work was praised by many scholars, and his ideas on the general theory of terminology were critically acclaimed, winning him the title of "the founder of modern terminology." Two main topics, standardization and the general theory of terminology, characterized the reception of Wüster's work in this decade.

2.5   The Dissenting Reception (1990 to 1999)

Authors are at the mercy of their readers and Wüster has not been an exception. Over the years, Wüster's ideas on terminology have attracted the attention of European and North and South American scholars. Yet opinions concerning his contributions have not always converged. His work has been highly rated among subject specialists and less among linguists. The 1990s represented a period in the reception of Wüster's work with a sharp increase in commentaries and interpretations, especially his views about terminology work and standardization. It is a period that was marked by the consolidation of a negative reception of Wüster's work; the beginning of new approaches to terminology; a revisiting of Wüster's work during celebrations of the centenary of his birth; and the proliferation of terminology research in different countries.

2.5.1 The Wave of Criticism

From a positive point of view, critical reception of Wüster's work is necessary for a reappraisal of ideas in terminology research. Different points of view can bring different perspectives and highlight missed points. The expression of different opinions and criticism allows for a clearer, more open attitude. Indeed, we would argue that the reception of Wüster's work has been a determining factor in the development of terminology. The wave of criticisms that arose during the 1990s was characterized by a dissenting period in which a group of scholars, mostly of a socio-linguist tendency, criticized the postulates of the general theory of terminology as being asocial and reductionist.

The critical reception of Wüster's work during this decade is fairly homogeneous and marginal in that it concentrates on particular topics or critical currents relating sociolinguistics and terminology. Acceptance of Wüster's claims for an onomasiological approach to terminology work required drastic shifts of linguists' perception of specialized communication and of their interests in problems of social communication. A general search of terminology publications from 1990 to 1999 reveals limited support and a good deal of resistance to Wüster's ideas.

In order to give an account of the entire complex panorama during this decade, it is useful to illustrate how the postulates of the general theory of terminology have shown some insufficiencies that have been stressed from diverse disciplines. First, from the social viewpoint, it is important to emphasize the communicative nature of terminological units affecting communication between professionals and the practicality look at the role of the social development of terms and their standardization. Second, from the linguistic perspective, there was an approach to seeing terminology as a natural language and to explaining it within grammar models that consider the diversity of linguistic and communicative varieties. The condition of natural language applied to terms makes them participate in many of the characteristics of the general language, with all the consequences that this implies. In order to explain this disassociation, the general theory of terminology should differentiate two objectives: terminology as a solid system of units of language, and terminology conceived as a set of semiotic units not necessarily included in the natural language. Third, from a linguistic

point of view, interest in pragmatics had reinforced the distinction between real language and ideal language. It had also moved towards studies on specialized communication and its terminological units which had pinpointed the contradiction in advocating univocity and monosemy of terms without distinction of communicative situations. Finally, from the cognitive stance, the concept and its idealization is not of particular relevance.

Criticism of the absence of social considerations in terminology work developed into a focal point of terminology research. Within this perspective, five main lines of criticism can be distinguished. Despite this serious criticism, however, Wüster's general theory of terminology led researchers to propose new approaches to terminology. Although these approaches are to be fully described in chapter 3, mention will be made in discussing the main lines of criticism.

The first wave of rejections of the general theory of terminology during this period comes from socioterminology scholars. According to Humbley (2004, p. 24), "la contestation organisée de la doctrine wüstérienne vient surtout des socioterminologues issus de l'Université de Rouen." Socioterminologists rejected the idea that language was suited for standardization. They tried to restore the social aspects by admitting the rich variation of language in terminology. Language is here considered as an intangible structure that is in constant change and which reflects the users' knowledge, opinions, and social and professional status. Criticism of Wüster's standardization ideas is based on two general assumptions then. First, interdisciplinary expertise of all fields of knowledge makes it impossible to isolate a special field clearly since it would involve the relations of two or more academic disciplines. Furthermore, science and technology are made up of mixed discourses where experts do not form a homogenous group. Second, terminology cannot overlook its diachronic nature because history, polysemy and synonymy are a natural and inevitable part of language. Additionally, concept systems and definitions are not static. They constantly evolve because information and theories related to them change as well. Accordingly, socioterminologists adopted methods and concepts taken from sociolinguistics, sociology, cognitive semantics and language policy. The reason for such actions lies in the fact that terminological research takes into account the people who communicate and communication situations in addition to the diffusion and restructuring of terminologies. The standpoint of socioterminologists is that, besides the

cognitive aspects, the social aspects of terminology should be acknowledged and considered in terminology theory and practice.

The second wave of disapproval of Wüster's ideas comes from a sociocognitive approach. The main criticism is directed against the univocity ideal stated by the general theory of terminology (Temmerman, 1997a, p. 58). Temmerman proposes that, contrary to the aim of univocity for avoiding unambiguous communication, polysemy is functional because it shows how language can be the means for making progress in understanding the world and specialized discourse. Harsher criticisms claim that "traditional terminology confuses principles, i.e. objectives to be aimed at with facts which are the foundations of a science. By raising principles to the level of facts, it converts wishes into reality" (Temmerman, 2000b, p. 15). The sociocognitive approach, as inspired by the insights of cognitive semantics and functional linguistics targets the difficulties associated with the Saussurian structuralist approach of Wüster's terminology.

A third wave of criticisms centers on the communicative dimension of terminology. Its main disagreement with the general theory of terminology is related to the social perspective, situations of natural communication, and identity purposes. This approach finds the general theory of terminology to be "insufficient" because it does not take into account the social dimension of terms by conceiving of terms as naming elements which limit their use for communication between specialists (Cabré, 1999a, p. 147). Communicative terminologists' attention is on contemplating the term in all its cultural and social complexity, bringing to light the dynamics of knowledge. Terms are studied in texts rather than considered as context independent labels as was proposed by the general theory of terminology. The communicative approach to terminology does not suppose any questioning of Wüster's theory, but rather an adjustment to its scope of application in diversified communication scenarios. It does not question the prescriptive context, since it is a guarantee for specialized communicative standardization at a national and international level.

Although the fourth wave of criticism was not as harsh as those coming from the sociocognitive approach to terminology, it notes that the general theory of terminology does not focus on the description, promotion and development of national languages. This cultural

approach to terminology emphasizes cultural diversity and the necessity of preserving cultural identities through the appropriation and dissemination of specialized terminology. The criticism is based on a philosophical approach to language which points at differences in the conceptualization of reality and the motivation of knowledge development in diverse cultures. The cultural approach to terminology questions the stability and the universality of characteristics that the general theory of terminology has attributed to concepts. From a sociolinguistic point of view, the methods of cultural terminology in the creation of a terminology in any given technical sector call for a precise identification of its socio-professional context, which is the case of many African languages.

The last set of criticisms of Wüster's ideas comes from textual terminology. It suggests that much of existing terminology work shows an ignorance of the linguistic function of terms as stated by Condamines (2000, p. 16). From this linguistic point of view, standardization, for example, as proposed by the general theory of terminology, can be seen as a way of assuring clear communication; however, this point of view does not consider the reality of language, which is in constant evolution. According to textual terminologists (e.g., Condamines, 1995; Bourigault & Slodzian, 1998/1999; Condamines, 2005; Aussenac-Gilles & Condamines, 2007) Wüster had a much-idealized vision of specialized languages. They are critical of the view that specialized language is unique when managing ambiguity and polysemy which they see as moving away from the nature of general language. Wüster's approach gives priority to the fields of knowledge and the concepts, which are considered stable. In contrast, these terminologists propose to build terminologies from texts by taking into account real documents in order to create a system of terms and identify variations in use and regularities among these variations in order to build a system to explain them (see Condamines & Péry-Woodley, 2007, p. 6). For textual terminology, the role of corpora for terminological analysis is important though not taken into account in Wüster's methodology.

Based on the above new approaches to terminology, it can be said that criticism of Wüster's general theory generated a more descriptive view of terminology research coming from five different but related areas: sociolinguistics, cognitive science, communication science, corpus linguistics and culture. This wave of criticism motivated Wüster's followers

attempt to shed some more light on Wüster's ideas about terminology. This brought attention to Wüster's work at the time of his birth centenary which coincided with a crucial moment in the reception of his work.

2.5.2 The Centenary of Eugen Wüster's Birth

In 1998, in honor of the one hundredth anniversary of the birth of Eugen Wüster, Infoterm brought together a group of scholars to reflect on Wüster's life and work. The international conference on Professional Communication and Knowledge Transfer (ProCom'98) was held in Vienna. The conference on "Professional Communication, Terminology and Planned Languages" was combined with the fourth Infoterm Symposium on "Terminology Work and Knowledge Transfer." One of two volumes of the proceedings, Volume 1, edited by Oeser and Galinski (1998), was dedicated to the life and work of Eugen Wüster.

The book draws Wüster's academic portrait and highlights a positive reception of Wüster's ideas. All the articles in this collection focused on Wüster's achievements and contribution to modern terminology. Attention also focused on Wüster's impact on the philosophy of science and examined the relationship of terminology to specialized communication and planned languages, factors that brought Wüster's success. Wüster's legacy was expanded by giving attention to his archive and unfinished projects. The book also examined Wüster's terminology activities between 1965 and 1985 and provided a description of 100 years of the Wüster & Co. firm. The book highlighted Wüster's private life and scientific exchange of letters. We will briefly describe each contribution in section 2.5.3.

Two other articles were published in 1998 to commemorate Wüster's birth. Articles by Gajdos and Felber (1998) and Kingscott (1998) can be mentioned. Both articles provided a positive review of Wüster's life and work. The positive reception shown during the commemoration of Wüster's birth and the negative reception represented by the new approaches to terminology arguably opened widespread efforts to revisit Wüster's work. Indeed, during this decade a number of authors showed interest in re-examining Wüster's ideas.

2.5.3 Revisiting Eugen Wüster's Work

Stimulated by the wave of criticism of Wüster's work, terminology scholars, mostly Wüster's followers, published works intended to clarify modern terminology views and show the role of Wüster's ideas. The decade saw a series of publications focussed on terminology science. Awareness of issues related to Wüster's ideas evolved in response to the negative criticism directed at his work.

Wüster's ideas attracted interest from other scholars as well. For example, Cellerino looked at the general theory of terminology and pointed to the misconception of how terminology was understood by Italian interpreters. The mistake was to "identify 'terminology' with the art of collecting lists of words related to a given field and 'translating' them into another language" (Cellerino, 1992, p. 59). Cellerino thus raised interpreters' awareness of the application of certain principles of the general theory of terminology. Picht (1994/1995) explored the multidisciplinary nature of terminology proposed by Eugen Wüster and outlined the development and expansion of the discipline in the post-Wüsterian era. The topic of causal concept relationships and causal concept systems was studied by Nuopponen (1994a). Nuopponen examined this issue from the point of view of terminological analysis and concluded that Wüster's idea of causal connections was helpful for analyzing and organizing the terminology of a subject field. In another article, Nuopponen (1994c) addressed the relationship between terminology work and hypermedia. According to her, Wüster was a visionary, and what he was expecting from computers in 1970s became a reality in the 1990s. Along the same line, Felber (1994) set out an account of East-West cooperation in international terminology work. He concentrated on the beginnings of terminology development and described the collaboration between Drezen and Wüster. Towards the second half of this decade, Cabré (1996) contributed to the dissemination of Wüster's work by translating it into Catalan and editing a collection of some of Wüster's selected readings. Today, this book is widely cited by Spanish and Catalan speaking scholars. Järvi (1997) compared Eugen Wüster and Charles S. Pierce's sign models and classification models in order to prepare an analysis of the sign system on graphical computer interfaces.

By the end of the 1990s, the publication of the commemorative edition of Wüster's work edited by Oeser and Galinski (1998) encouraged a revisiting Wüster's work. What follows is a concise outline of each of the articles in this collection. F. Lang focused on describing Wüster's life and work until 1963. Felber gave an account of Wüster's internationally-focussed terminological activities between 1965 and 1985. He also offered a compilation of Wüster's contributions to terminology in a bibliography that covers the period from 1931 to 1977. In Oeser's article, attention is directed to Wüster's general questions about the philosophy of science as they were reflected in his so-called semiotic triangle and to the relationship between systems of concepts and system of designations. Picht outlined the connection between terminology and specialized communication by drawing the attention to terminology work aimed at guarantying accurate communication between professionals. Picht emphasized that early researchers into terminology were aware of the central role of terminology in specialized communication. In Picht's opinion, all the activities related to specialized communication "will contribute to the development and consolidation of the foundations of modern terminology theory" (Picht, 1998, p. 131). In the article "Terminology Science and Planned Languages," D. Blanke stressed that terminological standardization had its roots in planned languages, and that the development of international terminology standards have been influenced by Interlinguistics which he identified as the effort to optimize communication by Eugen Wüster and Ernest Drezen who favored the use of international auxiliary languages such as Esperanto. A quick search through publications related to planned auxiliary languages reveals that Wüster's work on Esperanto is cited frequently. In the article "The Wüster archive: A special node in a European digital archive network," Budin presented the state-of-the-art of ongoing projects for continuing scientific investigations and analyses of the Wüster archive. Nedobity's article, written in German, concentrated on Wüster's scientific exchange of letters. Bühler revisited three major unfinished projects as part of the scientific legacy of Wüster. Finally, Wüster's son, centered his attention on the Wüster & Co. firm from 1889 to 1989 in an article written in German.

Although this is an interesting assortment of works dealing with Wüster's work, it should be noted that the selection is not comprehensive. The topics covered are characterized

by substantial coherence in the matters raised. It can, however, be viewed as the beginning of a reply to Wüster's critics and as an enlargement of terminology research.

2.5.4 Increase in Terminology Research Activities

With the increase in research activities, the decade of the 1990s had positive outcomes and favorable repercussions for the development of the discipline in Lakatos' terms of the growth of knowledge (see chapter 5). Immediately after the dissemination of Wüster's ideas and the explosion of criticism, the scientific community worldwide began actively participating in terminology research. Why is the increase of terminology research activities important for the reception of Wüster's work? In the first place, it led to terminology research in many parts of the world coming from the debate over the understanding of Wüster's contribution to terminology thus promoting the growth of the discipline. In the second place, it led to a broader and more organized discipline by creating terminology research groups, associations and networks that placed terminology in a better position within the interdisciplinary community. In this sense, Wüster's vision of the socialization of the discipline (see Wüster, 1974a) was realized. In what follows, reports on the development of terminology research from different parts of the world provide a window on the progress achieved in several countries.

Terminological research activities in the world did not all begin at the same time. In Europe terminology research began in the early 1930s. European and Russian pioneering research activities set the methodological and theoretical foundation of most terminology work largely based on the tradition initiated by Eugen Wüster and Ernest Drezen. Although European, Russian and Canadian research activities have been going on for some time, we will not concentrate on them because a full historical account of their development is beyond the scope of this dissertation. Some of the state-of-the-art reports on terminology activities during this decade may be seen in Draskau and TermNet (1993) for Russia; Humbley (1993) for France; and Irazazábal (1999) for Spain. In North America, specifically Quebec, Canada, research activities were initiated in the early 1960s when language planning was focussed on francization efforts. Short accounts of research activities for the 1990s can be found in Rousseau (1993), Auger (1994), Humbley (1994), and Delisle (2008).

Outside of Europe and North America, both the reception of Wüster and terminological research activities began to emerge later. We highlight one of the main characteristics during this decade, which is the increased interest in terminology research in some South American countries. Although terminological research began earlier than the 1960s according to Raventós de Castro (1988a), we dare to say that Wüster's reception only began in the final decade of the century after his death (see Fedor de Diego, 1995). Indeed, with her book *Terminología: Teoría y Práctica*, published in 1995, Fedor de Diego seems to be the first Latin-American author citing Wüster's work and working with Wüster's ideas. It is not certain whether Wüster or his work was known at all in South America before 1983 when the first national terminology symposium took place in Venezuela. However, in the Spanish-speaking world, the real reception could only be traced back to the publication of Wüster's general theory of terminology (1979a) that was translated into Spanish by Anne-Cécile Nokerman and edited by María Teresa Cabré. The first Spanish version was officially published in 1998. According to the abstract, "this work translated into Spanish from the English version, is considered a reference book." As has been mentioned, the English version has never been officially published. Therefore, we imagine the English version corresponds to Wüster's *Introduction to the General Theory of Terminology and Terminological Lexicography* (1985c) edited by GIRSTERM - Université Laval; Secrétariat d'État; Gouvernement du Québec-Office de la langue française. A second edition of the Spanish version was published in 2003.

Pozzi (1996) states that, in Latin America, organized terminological activities were recent. Between 1985 and 1995, the situation slowly changed because the need for monolingual and multilingual terminology had increased dramatically making it necessary to systematize the study and practice of terminology (see Pozzi, 1996, p. 171). For example, the creation of the Red Iberoameriana de Terminología (RITerm) reflects the growing interest of the Iberoamerican countries in terminological matters. Terminology work in Latin America is carried out almost exclusively at academic institutions. According to Pozzi, "Mexico was the first Latin American country to begin formal work in terminology" (Pozzi, 1996, p. 172). It was in the Colegio de México where they started teaching terminology as an independent course to translation students back in 1976.

Even though the impact of terminological activities can be clearly felt in South America from the 1980s on, critical interest in Wüster was sparse. No articles showing interest in Wüster's were published in that decade. In Colombia, to our knowledge, the first contact with any of Wüster's ideas took place during a seminar given by Heribert Picht and Gerhard Budin in 1995. The same year, as the main outcome from this seminar, the Colombian terminology network (COLTERM) was founded. Although Wüster's work is not much quoted or referenced, it is his theory that underlies most research projects in Colombia carried out since then (e.g. Velásquez, 2002; Vallejo, Plested, & Zapata, 2004). One of the first works that indicates interest in Wüster's ideas, in Colombia, was the translation of Felber's article, "The Relationship among Object, Concept and Symbol" (Felber, 1999). Attention was paid to this piece because it showed that the general theory of terminology had undergone important improvements during the last decades, especially in the 1980s.

In other South American countries, terminology research was also on the increase, several research groups were created. The dramatic increase in research output also reflects a clear correlation with the cooperation in terminology, which has always been a central concern for terminology. That is reflected during this decade in several international and regional terminology associations and networks being established. Moreover, numerous national terminology institutions, centers and networks have been founded. These include:

- Argentina, Grupo Argentino de Terminología (TERMAR);
- Colombia, Red Colombiana de Terminología (COLTERM);
- Paraguay, Comisión Paraguaya de Terminología (PARATERM);
- Uruguay, Grupo de Terminología de Uruguay (URUTERM); and
- Venezuela, Asociación Venezolana de Terminología (VenTerm); among others.

More specific terminological research reports in other countries may be found in Alpízar Castillo (1990, 1996), Remes (1991), Gianelli de Blasco (1995), Pozzi (1996), Popp (1998). To date, we have scarce information concerning terminology activities in Central America because "à l'exception du Mexique et de Cuba, peu d'activités sont réalisées en la matière dans la région" (Unión Latina, 2009, p. 3). This extract was taken from the special issue of the journal *Terminómetro* (2009) entitled *Panorama sobre la terminología en América*

Central, México y el Caribe, edited by the Unión Latina. Accordingly, we have decided not to work on this geographical area.

For the development of terminology, research activities are important because they allow researchers to shed light on specific terminology topics that are useful for the development of new methods. The process looks to finding solutions and commenting critically. In this respect, the wave of criticisms of Wüster's work in this period has had at least two important effects on the development of terminology studies. On the negative side, these criticisms have helped to destabilize some of the traditional funding basis that historically boosted the discipline weakening efforts to reorient and revitalize the general theory of terminology. On the positive side, these criticisms have stimulated many specialists to chart new directions for terminology studies. Scholars are taking notice of the contemporary forces of specialized communication and the important questions it poses for terminology.

Furthermore, language specialists are finding ways of linking their basic research to specific needs in modern terminology. In so doing, they are becoming more closely connected than ever with socio-communicative aspects and cognitive features focused on specific terminological needs. The mapping of these new directions could eventually enable terminology studies not only to make substantive new contributions to knowledge but also to convince the sciences to recognize and incorporate their finding into their fields of study.

What are some of the new directions that specialists are beginning to chart for terminology studies? Most noticeably, they are extending the traditional boundaries of the area studies map in ways that are helping to redefine what we mean by terminology studies. Progress in at least five different directions is beginning to change the face of the field, as we will see in the new theoretical approaches to terminology to be described in chapter 3.

As we can see, Wüster's work did not enjoy a very positive reception in some scholarly circles during the decade of 1990s. Detractors expressed their criticisms, proposed new theories, and consequently generated counter-criticisms and refutations by Wüster's followers. There was a better reception in the following decade.

2.6   The Irregular Recognition (2000 to 2009)

The decade of the 1990s was characterized by a critical reception of Wüster's work. However, the period from 2000 to 2009 has been distinguished by an effort to better understand Wüster's contribution to terminology and to raise important defending issues dealing with the negative reception of his work. For this decade, we have identified four recurrent topics that provide an overview of the reception of Wüster's work. First, are the replies to the negative criticisms of Wüster that prove a protective attitude towards his work. Second, although this decade has remained quite stable in criticism, a new line arose from ontology discipline. Third, reports on the state-of-the-art of terminology take into account Wüster's contribution to modern terminology. Finally, as time has passed, it seems to be the right time to write the history of terminology. Reports on the past, present and future of terminology illustrate how Wüster's ideas remain present.

2.6.1   Reactions to Wüster's Criticisms

Subsequent to the wave of negative criticisms that greeted Wüster's work in the decade of the 1990s, some terminology scholars, mostly Wüster's followers, replied to the unenthusiastic reception to Wüster's work. By making efforts to clarify modern terminology views, they have shed light on Wüster's ideas and on the development of modern terminology. Therefore, at this time, a series of seminar proceedings, colloquia and workshops were appearing in the field of terminology. Academic meetings have always offered opportunities for terminology researchers to interact with the aim of discussing terminological issues.

Academic terminology meetings and publications (Table 5) had the common aim of clarifying the theoretical foundations of terminology and Wüster's views. In most of them, one can find defensive reactions to the negative reception Wüster's work received during the decade of the 1990s. As seen in Table 5, during the first decade of the twenty-first century, there was an ongoing development in the aim of these colloquia. First, one can clearly see how defending reactions to the negative reception of Wüster's work started with preoccupations with the theoretical foundations of terminology. The discussions concentrated on an analysis of the theoretical foundations of terminology, a comparison of theoretical foundations of

terminology between Eastern Europe and Western Countries, and a look back over Wüster's general theory of terminology. Second, concerns with the negative reception continued with an examination of new modern approaches to terminological theories. By identifying a certain lack of knowledge of Wüster's ideas, efforts focused on introducing and clarifying both Wüster's thinking and the Viennese approach to terminology. Finally, yet importantly, was the analysis of the conditions of the origin and reception of terminology in the journal *Langages,* No. 168 (4/2007), entitled *Genèses de la Terminologie Contemporaine (Sources et Réceptions)*.

Table 5. Proceedings and Colloquia on Foundations of Terminology

Year	Publication	Proceedings/Topic
2001 2002	Terminology Science & Research No.12 Terminology Science & Research No.13	Proceedings of the Colloquium Terminology science at the crossroads? 13th European Symposium on LSP, Vasa, Finland.
2003 2004 2006	Terminology Science & Research No.14 Terminology Science & Research No.15 Budin, G., Laurén, C., Picht, H., Pilke, N., Rogers, M., & Toft, B. (Eds.). The theoretical foundations of terminology comparison between Eastern Europe and the Western countries. Würzburg: Ergon Verlag.	Proceedings of the Colloquium Comparison of the Theoretical Foundations of Terminology in Eastern Europe and the Western Countries. 14th European Symposium on LSP, Surrey, UK.
2004	Cortès, C. (Ed.). Cahier du CIEL. Des fondements théoriques de la terminologie. Paris: Université Paris 7 Denis Diderot/Université du Littoral - Côte d'Opale.	Proceedings of a workshop organized by the Centre interlangue d'études en lexicologie (C.I.E.L.) and VoLTer (Vocabulaire, Lexique et Terminologie), on March 12, 2004, Boulogne-sur-mer.
2006	Picht, H. (Ed.). Modern approaches to terminological theories and applications (Vol. 36). Bern: Peter Lang.	Proceedings to the Colloquium Approaches to Terminological Theories: A Contrastive Study of the State-of the-Art. 15th European Symposium on LSP, Bergamo, Italy.
2007	Savatovsky, D., Candel, D. (Eds.). Genèses de la terminologie contemporaine - Sources et réception [Special issue]. Langages, 168.	
In press	Candel, D., Samain, D., & Savatovsly, D. (Eds.). (In press). Actes du Colloque international "Eugen Wüster et la terminologie de l'Ecole de Vienne" Paris, 3-4 février 2006. Dossiers d'HEL (Supplément électronique à la revue Histoire Epistémologie Langage).	Actes du Colloque international "Eugen Wüster et la terminologie de l'École de Vienne" Paris, 3-4 février 2006.

As already shown in Table 5, the first concerns after the negative reception of Wüster's work focused on finding a possible explanation of why terminology was what it was. The main worry was whether the theoretical foundations of terminology were drifting apart. For that reason, the aim of the colloquium "Terminology Science at the Crossroads" was to spotlight and clarify the theoretical bases of terminology theory. As Toft and Picht (2001) point out, first clarification

> can only be beneficial to theoretical developments in terminology science; secondly, it is to be hoped that such a discussion will help to prevent basic theoretical positions drifting further apart; thirdly, it can provide a sounder theoretical base to our subject; and fourth, it is an essential foundation for the principles of standardization in terminology. (pp. 3-4)

In this sense, presentations arrived at opinions that were logical and coherent for the growth of the discipline.

For example, Budin offers an account of a critical and comparative view to terminology theory. He concludes that although the theories of terminology compete as scientific theories they are still at a low level. He adds that terminology theory is an "emerging scientific field that is going through a process of systematization, community building, and developing discourse patterns of research traditions that increasingly interact and fertilized each other" (Budin, 2001, p. 20). In Koskela's terms (2001), there are four possible explanations for why the theory of terminology is what it is. First, terminology theory is an emerging field. Second, it is multidisciplinary and has a close contact with practice. Third, in Kuhn's terms, terminology theory has met too many anomalies and it can no longer explain what it is supposed to explain. Finally, in today's world, there is a growing and diversified demand for terminology (see Koskela, 2001, p. 26). From the point of view of linguistics, Kretzenbacher (2001) adds that an explanation of the current situation of terminology does not justify lowering (us) to the level of attacking Bloomfield in linguistics or Wüster in terminology. On the contrary, he proposes to work in cooperation on the axioms that both disciplines can agree upon, on the ones that have to be negotiated and on the ones that are not negotiable by either side since the problem lies in the misunderstandings between linguistics and terminology.

Following the account of the current situation of the foundations of terminology, Myking (2001b) and Antia (2001) exposed their views on the negative reception Wüster's work has been receiving. These may be the first explicit positions against Wüster's critics (or in defense of Wüster). Myking explains a classification of scholars' positions in relation to Wüster's ideas. In his article, Myking addresses the 'socio-critical' point of view that accuses the general theory of terminology of neglecting the relationship between language and society. He classifies the sociolinguist and the cognitive-linguist critical positions as 'moderate and loyal' (those that suggest the integration of terminology and linguistics without abandoning the methodological and theoretical tenets); 'radical and subversive' (the socio-critic current which rejects traditional terminology completely, though similar points of criticism occur in other writings as well); and 'radical and loyal' (a linguistic inspiration quite similar to the "radical and subversive" tendency, but which combines with an explicit intention of analyzing Wüster in the background) (Myking, 2001b, pp. 54-56). Although Myking's article (2001b) is not an apology for Wüster's work, he thinks Wüster's critics are exaggerating and in most cases, are also wrong (p. 49).

Bassey Antia (2001) also replies to criticisms directed against Wüster's work. Using the concept of dialectic motion and taking into account Myking's "radical and subversive" group, he reviewed and analyzed the sociolinguist and the cognitive-linguist approaches to terminology. Antia's hypothesis is that "in the current state of things, Felber and misread Wüster constitute grist for criticism" (Antia, 2001, p. 175). Antia holds that critics have misinterpreted Wüster's work in aspects such as terminology description, metaphor, synonymy, context-dependency of terms, and description in terminological procedure (p. 174). Therefore, he wonders, along with Myking, whether the French-speaking socio-terminologists are basing their studies and criticisms on indirect sources of information (p. 75).

María Teresa Cabré (2003a) reacts to conclusions drawn in the 13th European Symposium on Languages for Special Purposes in Vasa 2001, arguing against Wüster's partisans' "lack of self-criticism." In her article "Theories of Terminology: Their Description, Prescription and Explanation," she proposes an account of the debate on the theory of terminology which has been the subject of discussion during recent years. She states that

Wüster offered a theory of terminology based on his limited "terminographic experience in compiling *The Machine Tool*" (Cabré, 2003a, p. 165). Additionally, she tried to explain that Wüster's theory was not questioned nor challenged for so many years because "terminology has not had a regular development" (p. 169) which implies confrontation with alternative theories. She declares that the theory of terminology was receiving so much interest lately because "it is a law of nature that a time of containment and concentration is followed by one of expansion and development" (p. 170). She also adds that criticism against Wüster's theory of terminology was not well received in Vienna terminology circles illustrating this "lack of self-criticism." Finally, she proposed an integrated theory of terminology consisting of a model which she calls the theory of doors. "This model attempts to represent the plural, but not simultaneous, access to the object; and in such a way that, whether starting from the concept or the term or the situations, the central object, the terminological unit, is directly addressed" (Cabré, 2003a, p. 186).

Other concerns after the negative reception of Wüster's work moved into a comparison of the theoretical foundations of terminology in Eastern Europe and the Western countries. The aim of the colloquium was to contrast Eastern European research with that of the West in order to reveal differences and similarities in their foundations. According to Alexeeva (2003) and Budin (2003), we may conclude that both Eastern and Western foundations of terminology have a deep philosophical interconnection. In fact, Budin adds that philosophy and epistemology have interacted with the fundamentals of the discipline and that Austrian philosophy has contributed to the development of the theory of terminology as a point of departure for Eugen Wüster's seminal work in 1931 (Budin, 2003, p. 72).

In 2004, the topic of theoretical foundations of terminology was still in question. Colette Cortès (2004) edited *Les Cahiers du CIEL* under the title *Des Fondements Théoriques de la Terminologie*. Regardless of the title, somewhat misleading, not all the articles focus on analyzing the theoretical foundations of terminology. In fact, the collection covers a broad field of investigation, as stated in the introduction. In any case, two articles are of special interest for the purpose of our research. They approach Wüster's ideas by giving a second reading of his work. The two articles, Danielle Candel's and John Humbley's, show that Wüster's work is

poorly known and often badly judged by the community of French-speaking researchers. Danielle Candel (2004) stresses that it may be the failure to read Wüster in French that has led to criticize his work. As a result, criticism may be mostly based on secondary sources since it is well known that the *Einführung in die allgemeine Terminologielehre und Terminologische Lexicographie* has not been translated into French yet. In a similar fashion, Humbley (2004) focuses on the reception of Wüster's work among French-speaking authors. He states that Wüster's legacy is the object of revision that varies along linguistic and geographical lines. He adds that the French tradition has been less receptive to the tenets of the Vienna School. Further, Humbley observes that French-speaking scholars could have had direct access to Wüster's ideas only after 1987 with the publication of Felber's *Manuel de Terminologie*. This fact may prove that Wüster was known to French-speaking scholars through secondary sources of information such as the InfoTerm, ISO, and UNESCO. Humbley concludes that the lack of access to Wüster's founding texts (in the form of translations) led the potential French reader to an often negative judgment, based on an erroneous interpretation because "tant que ses écrits ne seront pas disponibles en français et en anglais, il est inévitable que les lectures qu'on en fait soient de seconde main, et, de ce fait, peu fiables" (Humbley, 2004, p. 49). Humbley and Candel convincingly argue that Wüster's work was neither widely known nor widely studied in France.

In 2005, the Colloquium Approaches to Terminological Theories focused on a contrastive study of the state-of-the-art of the current trends in terminology (see Picht, 2006). The aim was to outline central positions and research questions concerning the dominant theoretical approaches to terminology and compare them. The theme was addressed by specialists who reported on the terminological approach in their respective geographical areas. Several positions became evident as each of the specialists portrayed the current development of terminology based on social, cultural, economic and political factors, for example. Others took into account the theoretical background of terminologists and the applications of terminological results. As a conclusion, Laurén and Picht (2006, p. 183) pointed out that central positions in terminology are due to "differing [sic] goals and interests, partly due to different needs, as is to be expected." With this colloquium, one can clearly see that

applications have broadened their horizons, so have their theoretical foundations and future developments.

Of particular interest is the special issue of the journal *Langages* No. 168 on the topic of the genesis and the reception of modern terminology (see Savatovsky & Candel, 2007). Speculative, scientific, technical, and political circumstances were identified which imply taking into account the philosophy of language, specialized lexicography and language planning as stated in the presentation. Although the issue did not concentrate on any specific school of terminology, Wüster's work was given an important place. One may bring together some preliminary conclusions from three articles that shed light on Wüster's ideas. First, Budin (2007, pp. 19-21) focused on how Austrian philosophy contributed to the development of the theory of terminology. His analysis demonstrated that the philosophical and epistemological roots of Wüster's theory of terminology were inspired by Austrian philosophy between 1862 and 1930. In fact, according to Budin, Wüster built his theory on concepts such as ontology and language criticism that he took from philosophers such as Franz Brentano and Anton Marty. In the same way, Alexius Meinong and Edmund Husserl inspired Wüster for the theory of objects. In addition, the model for the logical construction of language was acquired through Rudolf Carnap's readings.

A second conclusion dealt with the analysis of Wüster's metalanguage that revealed how he used reformulations and synonyms in the *Einführung in die allgemeine Terminologielehre und Terminologische Lexicographie* (Candel, 2007). A very important point has been raised by Candel who concluded that Wüster applied terminological variation to the main aspects of his theory; this implies that synonymy was Wüster's definition strategy in order to make himself clear. Contrary to what critics have said, Candel proves that Wüster did not ban synonymy (Candel, 2007, p. 79).

In accordance with Candel's analysis, Humbley (2007) offers an annotated reading on the 1979, 1985, and 1991 subsequent Prefaces of Wüster's *Einführung in die allgemeine Terminologielehre und Terminologische Lexicographie*. As a result, his third conclusion deals with the analysis of how these three prefaces place Wüster's work in two intellectual contexts. As Humbley indicates, the first two editions of the *Einführung* are highlighted in the context of

standardization and terminology training. In the third edition, the *Einführung* is placed within the contexts of applied linguistics. The author underlines that Wüster did not have an idealistic vision of language, but that he was interested in the manifestation of language engineering (Humbley, 2007, p. 90).

By the same token, and as it seemed that Wüster work was not very well known in the French community, Candel, Samain, and Savatovsky (in press) joined efforts to revisit Wüster and the Viennese approach to terminology. The aim of the colloquium was "de mieux faire connaître le fondateur de la terminologie moderne et de l'École de Vienne, Eugen Wüster (1898-1977), mais aussi d'exposer ce que l'on sait de cet auteur, et ce que l'on connaît encore mal." That is why presenter's contributions used information taken from Wüster's work, which was either only available in German or unpublished. The reason behind this decision was the hypothesis that Wüster's real thought is still unknown and that criticism comes from partial sources of his work. Therefore, presenters planned to summarize Wüster's linguistic and epistemological positions and analyze the terminology of the Vienna School. The publication of the proceedings will certainly shed more light on what Wüster really meant.

Many congresses and symposia were held in the decade of the 2000. As we have seen, several of them (organized by Wüster's supporters) were concerned with analyzing the current situation of terminology and on defending Wüster from his detractors. Other symposia, to mention just two, treated the theory of terminology and expressed critical views about the traditional theory of terminology. The proceedings were published in the journal *Terminology* 1998/1999. In the same way, Workshop 6 of The XVII International Congress of Linguists held in Prague, in 2003 gave attention to the theory of terminology explicitly from epistemological debates (see Hajičová, Kotěšovcová, & Mírovský, 2003).

Although during this decade criticism has been smoother, Wüster's work still incites controversy. Indeed, references to Wüster criticism continue to erupt from the corner of ontology research studies.

2.6.2 Criticising Wüster's Work from Ontology Studies

We have stated that it was mostly during the decade of the 1990s that Wüster's ideas generated numerous miscellaneous criticisms. However, during the first decade of the twenty-first century (2000 to 2009), terminology and ontology researchers focused on the application of ontology in biomedicine and biomedical informatics and started to discuss and judge Wüster's ideas on standardization very critically. That is how in the area of life sciences especially biomedicine and biology, researchers such as Smith, Ceusters, and Temmerman (2005), Smith (2006a, 2006b) and Smith and Ceusters (2007) have criticized Wüster's standardization legacy as seen in the ISO standards.

The background for this criticism is that the existing clinical terminology is of variable quality and low consistency. According to Smith et al. (2005), this is due to the influential ideas inherited from the work of Eugen Wüster, the founder of the ISO/TC37. Moreover, biomedical terminology is constantly changing and Wüster's concept-based approach to terminology generates problems in application because it fails "to anchor the terms in terminologies to corresponding referents in reality" (Smith, 2006a, p. 287).

Criticism can be summarized by Smith (2006b, p. 3) who says that standardization falsifies and misinterprets the real order of things. It also impedes competition and innovation in health and safety regulations. In brief, major disapprovals are:

1. Wüster's psychological view of the concept, as defined in the ISO/TC37 standards, obstructs efforts to solve the problem of inconsistency in clinical terminology.
2. Wüster's idea of terminology work which focused on classification of concepts in people's minds served as the basis for influential confusions.
3. Wüster's lack of clarity in differentiating between concepts and objects in ISO/TC37 (see Smith et al., 2005).

Smith and Ceusters (2007) also reproach Wüster in the ISO Technical Committee 37 of being the "almost single-handedly responsible for all of the seminal documents put forth by this committee, and his ideas have served as the basis for almost all work in terminology standardization ever since" (p. 105). Smith and Ceusters (2007) refer to the ISO standards as the "International Standard Bad Philosophy." They add that interestingly, and fatefully, many

of the core features, which serve as obstacles to the information alignment that they seek, can be traced back to "the influence of a single man, Eugen Wüster."

From the positive side, standards are supposed to ensure mutual consistency. However, from the negative side, "in the field of medical standardisation the influence of the Wüsterian way of thinking is all-pervasive" as Smith (2006b, p. 3) states. For example, the Systematized Nomenclature of Medicine-Clinical Terms (SNOMED) contains errors based on ISO standards because "even in medicine, however, terminologists have been encouraged to focus on concepts and definitions rather than on the corresponding entities in reality" (Smith et al., 2005, p. 650). To solve this problem, there have been considerable efforts directed towards making Electronic Health Records (EHR) interoperable through improvements in medical ontologies, terminologies and coding systems as pointed out by Smith, Ceusters, and Temmerman (2005). They propose to remove confusions by developing a biomedical ontology, for the classification of entities in reality, not based on concepts in people's minds as proposed by Wüster. They are confident that ontologies, defined as the science of how things are classified and of how they relate to each other, can make a crucial contribution to the interoperability of coding systems and healthcare records.

Based on their research, Smith and Ceusters (2007) proposed ontology as the core discipline of biomedical informatics. Philosophers, especially ontologists, and medical researchers are working on how to make useful ontologies for biomedicine and developing common rules to establish best practices in building ontologies and group interoperable biomedical ontologies. The authors conclude that Wüster's ideas could be embraced by so many in the fields of artificial intelligence, knowledge modelling, and nowadays in Semantic Web computing. The simplification in understanding the connection of mind, language and reality answers deep needs on the part of computer and information scientists. Researchers in biology and medicine may use ontology classifications to be able to speak the same "language" and to manage biomedical information and knowledge in machine-readable form. The ontological view of concepts that consists on grouping by universals and not by concepts, as biomedical terminology, needs clinical reality (see Smith, 2006a).

We may reply to Smith's criticism with some extracts from the report commemorating the 50 years of ISO/TC 37. First,

> new working items targeting especially applications introduced new aspects of methodology standardization in the field of terminology. All the previous documents had either been revised or dropped, more than 15 standards were published by the subcommittees during that period …. Only ISO 6156:1987 has been kept valid, because it might still be in use somewhere, although the era of mainframe computers applied to terminology has passed since long. (ISO/TC 37, 2004, p. 5)

Second, "2004 – ISO-New horizons: ISO/TC 37 took another look with respect to adapting its working programme and structure to the new situation due to the emergence of the information and communication technologies (ICT)" (ISO/TC 37, 2004, p. 5). With these extracts, may we infer that Wüster's ideas are no longer represented in the ISO standards?

At this point, it is also appropriate to highlight the efforts of two research groups. The Terminologie et Intelligence Artificielle (TIA) group created in 1993 by Didier Bourigault and Anne Condamines and the Équipe Condillac, a pluridisciplinary research group that brings together researchers from different institutions and that centers the study on the concepts of ontology and terminology. The Condillac research group organizes the annual conferences Terminology & Ontology: Theory and Applications (TOTh) to bridge the gap between terminology and ontology. Contributions by those concerned with LSP, terminology and knowledge engineering and, issues related to language and knowledge focus on opening up new perspectives for both theoretical and practical development (e.g. Roche, 2007, 2008; Lerat, 2008; Kockaert & Antia, 2008) among others.

2.6.3 Revisiting the State of the Art of Terminology

Terminology studies cover a broad range of activities with the eventual goal of solving professional communication problems resulting from internationalization and the development of technology and science. Research and progress in terminology studies have mainly resulted from practice-oriented terminological activities such as terminography, terminological lexicography, terminology standardization, terminology planning, terminology management and terminological training, among others. During the decade from 2000 to 2009, the time for a

state-of-the-art review was right, terminology studies have advanced over the past thirty years to reach a level where guidelines can now be suggested. Several authors (e.g. Budin, 2001; Laurén & Picht, 2006; Castro-Prieto & Olvera-Lobo, 2007) have reported the level of development reached by terminology at some particular times making the state-of-the-art reports a characteristic in this decade. Even though the reports of Sager and Johnson (1978) and Bowker (1994) were not part of this decade they will be included for the purpose of a historical overview. By revisiting these reports, we may show how Wüster and his ideas have been received at different times. In this sense, we seek to trace the interest in and understanding of the link between the different state-of-the-art reports of terminology and the reception of Wüster's ideas. Thus, the relationship between the state-of-the-art in terminology and the reception of Wüster's work feels right. It seems naturally correct to assume a direct correlation between the development of terminology on the one hand and the reception of Wüster's ideas on the other.

Thirty years ago, the state-of-the-art in terminology was characterized by a clear presence of Wüster's work. Right after Wüster's death, this would appear to be a good time for a state-of-the-art. As Sager and Johnson (1978) put it, terminology was growing into an applied discipline as Wüster revealed in his doctoral dissertation (1931) and *The Road to Infoterm* (1974a). At that moment, the situation was characterized by an intense interest for international cooperation and for studying the general theory of terminology. Efforts addressed practical applications of the general theory of terminology such as the creation of terminological databases (e.g. EURODICAUTOM). Attention to terminology theory, language planning, terminology management, terminology training, and technology were the topics to be developed. Indeed, "the present state of terminology affords much cause for optimism" (Sager & Johnson, 1978, p. 91).

Applied terminology activities have predictably grown in extent and functionality since Wüster's time. Bowker (1994) presented the state-of-the-art and focused on comparative terminology, and terminology and knowledge engineering. "Comparative terminology is one of the most traditional forms of terminology" (p. 182) and knowledge-based terminology is one of the newest areas of research. It is true that in the past, the use of knowledge engineering in

practice seemed promising. However, information tools were still inadequate or it was not convincing enough for the practicing terminologist. Only recently, concerns of knowledge engineers and terminologists have become very similar so both disciplines can help each other. Terminology researchers and knowledge engineers are performing more and more studies and thereby gaining the benefits of using knowledge-based methods and knowledge engineering approaches to terminology and *vice versa*. Where is Wüster in this state-of-the-art?

In 2001, Budin tackled "a critical evaluation of the state-of-the-art of terminology theory" given that in recent years, significant progress has been made and Wüster's general theory has been persistently criticized. The evaluation let Budin draw conclusions in two directions. First, progress has made terminology an "emerging scientific field of study" where "a theory of terminology is currently emerging, on the basis of pioneering achievements" (Budin, 2001, p. 20). Second, although Budin (2001) admits that criticisms of Wüster's theory are correct, he suggests it is time to remove the mystery from Wüster and his work and to work for mutual respect and for constructive criticism (p. 20). Despite the fact that Budin's state-of-the-art shows that terminology still lacks a sound theory, it is true that the subject field is strengthening with newer theoretical approaches.

Another area where terminology has made decisive progress is in theoretical approaches to terminology. A comparative study of the state-of-the-art report on the approaches to terminological theories (e.g. Laurén & Picht, 2006) revealed that Wüster and his work is still present in just a few geographical areas such as German-speaking areas and Africa represented by Nigeria compared to Russia, the Nordic countries, Canada, and the Anglo-Saxon areas. In the case of Romance languages, one can still find Wüster's ideas reflected in the importance of terminological theory and its development as socio-terminology "has developed its own theory in opposition to what has been called the General Theory of Terminology" (Laurén & Picht, 2006, p. 166). Nevertheless, in the German-speaking areas, a tradition of terminological theory goes back to the founders of terminology with a permanent development of the discipline. Additionally, in the German-speaking areas, terminology and philosophy of science has attracted as much attention as has language planning, language criticism and terminology planning. Likewise, in terminology teaching and training, several of

129

the first manuals "continue to be updated to the present day" (Laurén & Picht, 2006, p. 174). Theoretical and methodological aspects of terminology have as well developed based on Wüster's pioneering work. What we can infer from this state-of-the-art is today's absence of interest in Wüster's work in the rest of the world. Attention shown over the past years towards his work is, at present, vanishing producing changes, not only methodologically but also theoretically.

Not long ago, during the decade of the 1990s, the posthumous reception of Wüster's work was approaching a state of emergency. Public interest in his work was on the increase because new and critical comments were gradually appearing. In addition, the quantity and quality of specialized scholarly publications were increasing more rapidly than anyone would have expected even a decade previously. This last state-of-the-art (Castro-Prieto & Olvera-Lobo, 2007) maps the intellectual production of terminology scholars and the network within their academic community. The study aimed at visualizing the discipline through the Author Co-Citation Analysis (ACA), identifying the most influential authors of the discipline and displaying their interrelationships.

In their study, Castro-Prieto and Olvera-Lobo found that during the period of 1967 and 2001, research in terminology developed "in three clearly differentiated directions: theoretical foundations, Natural Language Processing and Socio-terminology" (Castro-Prieto & Olvera-Lobo, 2007, p. 816). The 1990s were found to be the peak in the production and publication of scholarly articles. This fact confirms the imminent explosion of the negative reception of Wüster's work and the birth of the new theoretical approaches to terminology in the decade of the 1990s. They also demonstrated that authors in the center of the network (Figure 5), for instance Sager, Wüster, Felber and Picht, have been the most influential authors of the discipline with Sager being the most cited of all (Castro-Prieto and Olvera-Lobo, 2007, p. 826).

Figure 5. Red Social de la Terminología. (Castro-Prieto & Olvera-Lobo, 2007, p. 833)
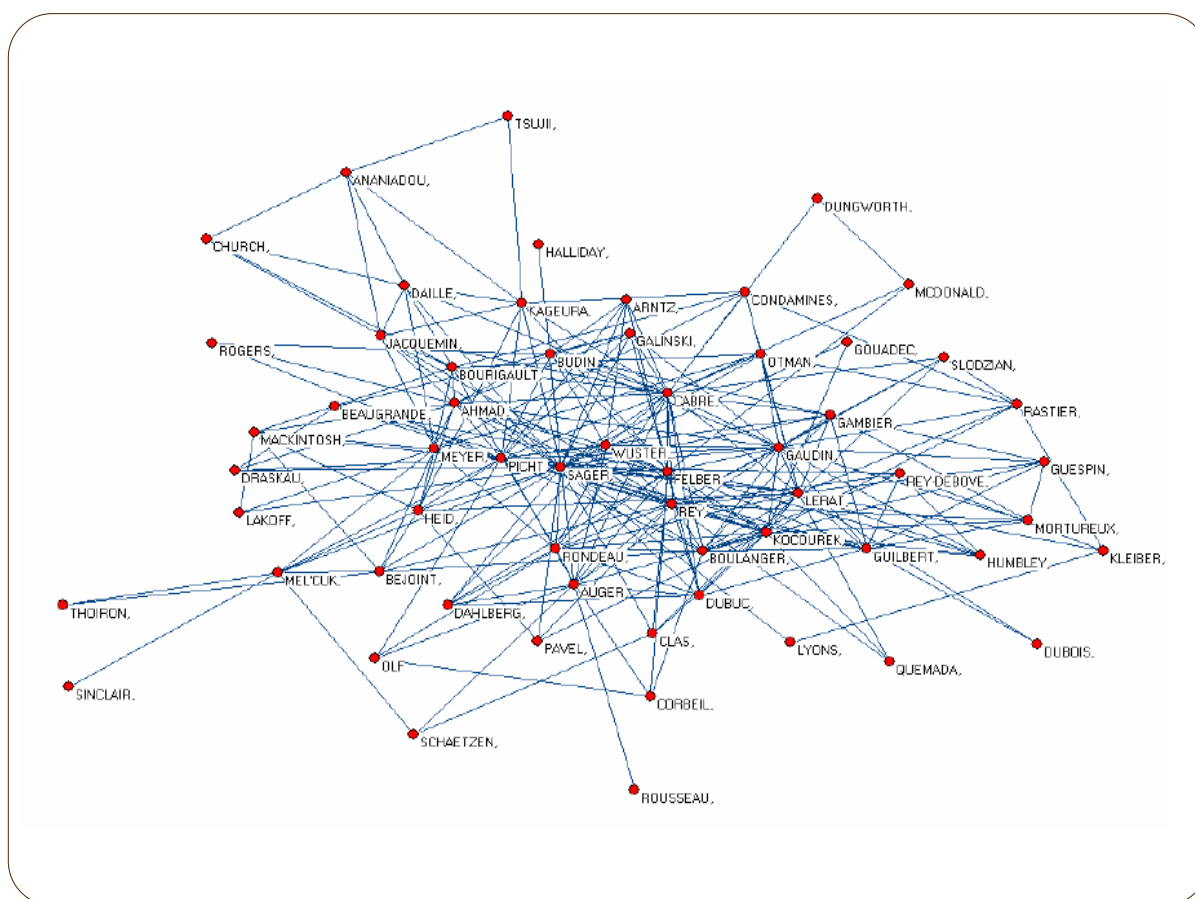
In addition, Budin, Ahmad, Picht, Artnz and Wüster represent the origins and the theoretical foundations of the discipline. Also, Gaudin, Gambier, Guespin form the node for the sociolinguistic approach to terminology and Bourigault characterizes the new approaches to textual terminology or what the authors called natural language processing (Castro-Prieto & Olvera-Lobo, 2007, p. 832). One can briefly conclude that based on these three directions of the development of terminology Wüster's work has occupied a central place.

We surveyed several articles on the state-of-the-art of terminology to see the link between the development of terminology and the reception of Wüster's work. The state-of-the-art reports started with an overview of terminology in a broader sense where Wüster was very much taken into account. The rest of the reports revealed a certain absence of Wüster. Other works (e.g. Guerrero Ramos & Pérez Lagos, 2002; Quiroz, 2002; Cabré, 2004; Plested Álvarez

& Castrillón Cardona, 2004; Álvarez Catalá, 2005; Rodríguez Ortega & Schnell, 2005b) do not approach a general state-of-the-art of terminology but focused on reporting the state-of-the-art on specific geographical areas.

The success in the progress of terminology can be attributed to different lines in research activities, to the development of new tools that were not previously available and to the reception of Wüster's work. We suggest that general research directions that were not envisioned by Wüster at his time are likely to lead to technological advances. Although it is difficult to predict where the future progress will come from, optimism about the next generation of formal methods is justified in view of the progress during the past decade. Such progress, however, will strongly depend on continued support for basic research through confrontation and collaboration as Eugen Wüster once envisaged.

2.6.4 Terminology: Past, Present and Future

Modern terminology has grown initially from a means of international specialized communication in the 1930s to a practical field of application in terminology management nowadays. During the first decade of the twenty-first century, authors concentrated on reporting the past of terminology and on predicting its future developments. This section deals with issues in terminology research that have contributed to the understanding of the reception of Wüster's work and therefore accounts for the past, the present and the future of terminology. Most importantly, what follows provides us with a chronological follow up of the way Wüster's work has been treated throughout the history of modern terminology.

2.6.4.1 Yesterday: In the Beginning

From the point of view of the reception of Wüster's work, terminology has a rich, complex, and controversial history. Although the origins of terminology can be traced back from antiquity, with a more recent historical perspective developed from the twentieth century through the groundwork of pioneers such as Wüster, there is a general consensus that terminology as the discipline it is today was established in 1930s with Wüster's doctoral dissertation.

In order to understand Wüster's impact for the present and future of terminology, we will recapitulate Wüster's contribution to terminology in a few words. First, in the twentieth century, the development of science and technology and the birth of linguistics as a scientific discipline are facts that contributed to the evolution of terminology. It is also the time when terminology achieved international recognition. For example, we saw the emergence of electro-technical terminology, the guidelines for terminology work and methodological principles, the Vienna School of Terminology, the creation of the ISO/TC37 and finally, Wüster's posthumous publication of the introduction to the general theory of terminology. From the point of view of Rodríguez Ortega and Schnell (2005a), all these facts show that Wüster is still relevant for modern terminology.

From Cabré's (2005; 2007a) standpoint, Wüster's work is past, present and will be future. The past of modern terminology was settled in the first half of the twentieth century when the golden age was headed in Europe by Wüster's work and when terminology, as Cabré states, was proposed as an ideal, contrary to the real needs of today. However, Slodzian (2006) prefers to locate the practice of terminology in the eighteenth century with Linnaeus's nomenclature. In her view, terminology as a discipline is linked to the age of the "scientific conception of the world" elaborated by the Vienna Circle. Therefore, the Vienna general theory of terminology, proposed by Wüster in 1931, is inspired by the objectives of the "unified science" established by the Vienna Circle.

Likewise, the first historical foundations of modern terminology started simultaneously in Austria and Russia with Drezen, Lotte and Wüster, three engineers considered the fathers of modern terminology, as pointed out by Picht (2007). It is well acknowledged that the foundation phase started with Wüster's doctoral dissertation in 1931 in connection with the ISO recommendations. Picht also remarks on how some issues of LSP and terminology were not taken into account by mainstream linguistics: "although the attitude of linguists towards LSP and terminology was to a certain extent reserved and sometimes even depreciatory, it is a fact that there existed issues and domains, which were outside the scope of the mainstream linguistics of those days and therefore considered of hardly any interest for linguistics" (Picht, 2007, ¶ 15), for example, LSP and terminology planning, standardisation, LSP translation,

professional communication, classification and knowledge ordering and representation (¶ 16). Therefore, researchers worked with what they had at hand.

2.6.4.2 Today: Much Has Happened Since Then

Regardless of the fact that Wüster's ideas are already considered dated by some, they are part of the new present scenery as the current situation has forced researchers to reconsider the principles of the general theory of terminology (Cabré, 2007a, p. 93). The crisis of the general theory of terminology started in the late 1980s. According to Picht (2007), from 1975 to 1995 linguistic and terminological environments turn to a more pragmatic approach by placing emphasis on the foundations of language. In addition, terminology gained force by bringing together terminology and knowledge engineering and widened the theoretical and practical scope by focusing on professional communication. Nowadays, the increase in the new theoretical approaches to terminology shows the integration of linguistics and professional communication and the relation to other sciences such as sociolinguistics, applied linguistics, and cognitive science among others.

In the same way, three shifts have changed the discipline of terminology over the last decade as identified by Temmerman and Kerremans (2003). The shift towards computational terminology management has changed terminology methods with the creation of software for data management (Temmerman & Kerremans, 2003, pp. 1-2). The linguistic shift in the theory of terminology takes terms (linguistic expressions) in texts that have become the starting point in terminological analysis (p. 2). More recently, the ontology shift in terminography has varied from terminological databases to terminological knowledge bases (TKB). These TKBs are now referred to as ontologies (p. 3). Along this line, Wüster's work and "traditional terminology," from the Vienna School methodology, are seen as belonging to the earlier period of terminology.

2.6.4.3 Tomorrow: Possible Next Steps

The future is always difficult to predict. However, some indicators suggest where modern terminology is going, beyond being grounded in a traditional approach. Two trends are associated with theoretical and practical issues. From a theoretical point of view, Wüster's

ideas will still be relevant in the future. Cabré (2007a) believes that "une théorie de la terminologie se consolidera au cours des prochaines années … le modèle de Wüster se définira comme l'une des options possibles (c'est-à-dire une théorie des connaissances [une théorie cognitive] restreinte aux domaines dont l'objectif est de normaliser)" (p. 105).

From a practical point of view, recent research concludes that the future of terminology will be in applied terminology and knowledge engineering (see Slodzian, 2006). It is true that methods and tools have been developed thanks to the use of information technology. Indeed, as terminology management becomes more effective, there will be less need for terminology work routine (traditional methods), but cases in computational terminology research will be more challenging. Greater understanding of methodological issues through basic research will result in more coherent and more precise practices. Advanced corpus techniques will contribute, for instance, to the transformation of automatic extraction of candidate terms. In this sense, the conceptual and the textual terminology approach have already played a decisive role in the development of modern terminology.

From a broader point of view, the future of terminology, like its past, is linked to the developments of other closed disciplines such as linguistics, communication science and technology. According to Picht's (2007) conclusion, the growth will head for an integrated, future approach to linguistics and professional communication. When discussing the history of terminology through the eyes of the reception of Wüster work, there is one common explanation possible. The pioneering work of Wüster opened up a completely new field of terminological research. Wüster exists in the past, in the present and in the future of terminology. Terminology has a complex and controversial history dating back to antiquity, and continues to evolve in the present era of communication science. Its modern origins are linked to the period of unambiguous international communication. Today, the future of terminology is technologically promising as it is the time to bring tomorrow's future closer to a reality and write its history. At this point, it is worth mentioning the history of terminology that Delisle (2008) has written. His book gives a historical description of terminology in Canada. The author describes the origins of the profession and explains the translational and the

language planning terminology approaches and the Quebec School of terminology. Wüster again is placed at the beginning of the history of Canadian terminology.

Briefly, the reception of Wüster's work presented during this decade was limited to texts dealing with the reactions to the negative criticism, the new line of criticism coming from ontology, the state-of-the-art in terminology, and the reports on the past, present and future of terminology. Our purpose was to identify and briefly elucidate some current and potential indicators of the reception of Wüster's work.

The historical study of the reception of Wüster's work during his lifetime and especially after his death has been rather blank. We are aware that a general overview, limited to just a few works on recurring topics, cannot give a complete account of his reception and for this reason we will devote chapter 4 to an empirical-descriptive analysis of the reception of Wüster's work in 166 academic journal articles. We have tried to show during this decade that thirty years after the publication of Wüster's general theory his contribution to terminology still generates uneven reactions. It provides the best framework by which to unify different approaches. It is, after all, the historical conditions that influenced Wüster's work (social, cultural, economic, intellectual, and academic) rather than the actual content of his work, which have led to the irregular reception of his work. His name swings from that of "the father of terminology" and "the founder of modern terminology" to "the founder of bad standard philosophy" in Smith's (2006b) words. When Wüster proposed his general theory of terminology in 1974 and 1979, mainstream linguistics was in vogue and the first computers were just finding their way into terminology applications. The cognitive turn we observed nowadays in linguistics converges with Wüster's conceptual orientation in the area of terminology and the technological turn meets Wüster's visionary idea of terminology as an interdisciplinary field with computer science.

2.7 Conclusion

In this chapter, we have portrayed the reception of Wüster's work broadly and chronologically, claiming that the reception of his work has contributed to the development of modern terminology. Our framework, based on a chronological periodization, has proven

useful for this endeavor as a means of visualizing the wide variety of interpretations that readers have made of Wüster's texts. The periodization (i.e. empirical) was used as a contextual model, which looks at the historical circumstances surrounding the reception of Wüster's work. Such reception needs to be treated as a path of potentially conflicting commentaries operating in particular situations (synchronically) and as processes over time (diachronically).

Three objectives guided the discussion in this chapter. First, we distinguished a chronological evolution of terminology from which to build our analysis of the reception of Wüster's work. To this end, we proposed a timeline with a brief chronological description highlighting the themes and events related to Wüster's work. Second, we sketched the evolution of the current, rapidly changing scenario of Wüster's reception by commenting on the last three decades comprising the years from 1979 to 2009. Finally, we considered the different periods of the reception to explain how Wüster's work was received, and why it matters. The discussion in this chapter led to the following conclusions:

First, the significance of the reception of Wüster's work is rooted in the practical and methodological applications of his ideas that have paved the way for the development of modern terminology. It is of course important to highlight that social, cultural, linguistic and geographic factors are to be taken into account.

Second, we took the linear approach of a timeline for presenting details on the reception of Wüster's work. Although a timeline approach to the reception of Wüster's work tends to be delicate in areas such as background and refinement, it offers a compact presentation and a clear logical flow of the reception of Wüster's work, while allowing flexibility in examining the characteristics of the periods easily.

Third, we found that during the period of the early posthumous reception (1980 to 1989) Wüster's views became quite widely disseminated. Yet in spite of the growing interest for international communication, it was not until after 1974 that Wüster's views on the general theory of terminology began to gain general acceptance, largely because of his work for the ISO standards, the few translations into French or English and the publication of Felber's

manual in 1984. Therefore, knowing that they were just Wüster's ideas, they succeeded during this decade.

The fourth conclusion we arrived at was that the efforts to disseminate Wüster's work proved fruitful in two ways. On the one hand, it seeded the interest in doing terminology research all over the world generating an increase in theoretical reflection and knowledge production. On the other hand, it boosted a wave of criticisms of Wüster's general theory of terminology that further gave rise to new terminological approaches to terminology. For instance, the communicative, socioterminology, the sociocognitive, the cultural, and the textual approaches have contributed to the new methodological scheme of modern terminology. However, they show modern theoretical and methodological proposals that suppose a negative reception of the traditional theory.

In our final conclusion, we discuss the irregular recognition of Wüster's work which requires an interpretative approach to understanding the fact that we live during a different and chronologically distant historical period. These moments in the reception of Wüster's work include diverse and ever-changing cultural, economic, and societal influences. An examination of the reception of Wüster's work leaded us to find controversial opinions at all times. However, during the decade of 2000 to 2009, studies on Wüster's work have gone beyond basic polarizations in order to offer detailed interpretations of his work based on fresh publications of compilations of Wüster's unpublished works. These studies identify the significance of the work of such often-misunderstood terminologist, as is Eugen Wüster.

In this chapter, we have not only struggled with how to portray the reception of Wüster's work in modern terminology, but also with how to organize it. In the first instance, this chapter has provided a broad picture of the reception of Wüster's work. There are specific topics of the reception of Wüster's work that we have not yet mentioned. For example, we have yet to discuss the negative reception that materialized in the new theoretical approaches to terminology (chapter 3). Furthermore, there is qualitative and quantitative data concerning the reception that we have not included yet. These will be discussed in the chapter 4 with the empirical-descriptive study on the reception of Wüster's work in scholarly journals.

Chapter 3

Reactions to Wüster's Work: Theoretical Approaches to Terminology

Since the time of Eugen Wüster, approaches to terminology have expanded substantially. Along with broad technological developments and a profusion of new approaches, novel methods have been applied to terminology from a variety of disciplines, social contexts and languages. The purpose of this chapter is to give an overview of recent theoretical approaches to terminology. These approaches are included in this dissertation because they represent an explicit reaction to Wüster's work and are, from a practical point of view, the expression of the work's negative reception. One consequence of bringing novel approaches into the field has been the introduction of insightful revelations on the reception of Wüster's work and on the broadening of terminology as a discipline (see chapter 5, section 5.3). Both goals and methods of terminology, well established in the 1930s for some, and in the 1970s for others, have expanded to the point that terminology no longer has any boundaries. As terminology methods driving research are changing, new concepts are emerging and domains and the type of users being studied are diversifying. As a result, much of what is being done is bringing considerable change to the methodology of terminology research.

Before introducing these new theoretical approaches to terminology, it is necessary to briefly describe the main characteristics of the traditional approaches typified in the so-called schools of terminology. For the Prague School, the Soviet School and the Vienna School, the main characteristic is the use of onomasiological methodology. Today these schools are classified as the traditional schools of terminology (e.g. Rondeau, 1981; Temmerman, 2000b; Cabré, 2003a). They share the same traits concerning theoretical principles, similar research projects, and common research methodologies. Though Wüster may not have known about these schools (see Felber, 1981), he and they share two methodological characteristics: first, the concept is the starting point of any terminological analysis, and second, language standardization is the underlying motivation. The new theoretical approaches to terminology

outlined in this chapter depart from these methodological principles by criticizing traditional methods of terminology research.

As contemporary approaches to terminology are generally seen from several methodological orientations, classifying these approaches is not an easy task. Indeed, a variety of possibilities becomes apparent. First, dichotomic approaches present various possibilities. However, they run the risk of being exclusive:

- Traditional vs. Modern
- Theoretical vs. Methodological
- Descriptive vs. Prescriptive
- Theory-oriented vs. Practice-oriented
- Traditional vs. (socio)cognitive
- Onomasiological vs. Semasiological

At the same time, they are only able to represent two poles of a particular continuum. Currently, new approaches to terminology have diversified and taken into consideration advances in technology. In this respect, Picht (2006) reports that the application of electronic tools was the prevailing denominator treated in the section papers of the 15th European Symposium on Languages for Special Purposes held at the University of Bergamo in 2005. The tendency of the presentations was characterized by an "increasing merge of well-known and new methodological approaches" and by "the development and application of electronic tools especially in connection with LSP corpora" (Picht, 2006, p. 9). This shows

> that terminology as an inter- and trans-disciplinary field of knowledge is firmly developing its theoretical foundations and practical applications in accordance with and within the framework of its overall goal: to ensure and to augment the quality of communication with professional content regardless of the level of professionalism of the users. (Picht, 2006, p. 10)

Second, six main approaches to terminology are identified in an article by Picht (1997, p. 13), written in Danish and cited by Pilke and Toft (2006, p. 38). Picht characterizes these approaches as belonging to the past and being of historical interest. They are the formal linguistic approach, the applied linguistic approach, the language and terminology planning approach, the LSP communication approach, the I&D approach, and the knowledge technology approach. As they are partly overlapping, they should not be regarded as mutually exclusive.

There seems to be no best way to classify approaches to terminology. In this dissertation, the term "approach" is used to describe the actions intended to deal with specific methodological problems within a terminology situation. This chapter discusses the new theoretical approaches to terminology that derive from the criticisms of Wüster's work. We have chosen this criterion because it reflects the negative reception of Wüster's work. Therefore, the approaches to terminology, in the dichotomies presented above, will not be described in this chapter since they do not reveal, explicitly, the negative reception of Wüster's work. The approaches to terminology to be described here come from diverse branches of linguistics, mostly from the sociolinguistic perspective. Names like socioterminology (e.g. Gaudin, 1993b, 2003), communicative theory of terminology (e.g. Cabré, 1999a, 2003a), sociocognitive terminology (e.g. Temmerman, 2000b), cultural terminology (e.g. Diki-Kidiri, 2000a, 2000b) and textual terminology (e.g. Auger & L'Homme, 1994/1995; Bourigault & Slodzian, 1998/1999; Condamines, 2005) may be classified broadly as sociolinguistic oriented approaches to terminology. The overview of these approaches will be as comprehensive as possible.

3.1 Sociolinguistic Approach to Terminology

Sociolinguists have lately questioned the validity of the general theory of terminology in what they nowadays call Wüsterian terminology. Criticism comes from the assumption that terminology is a phenomenon that takes place in specialized communication, which is framed by the sociolinguistic influence of culture. Explicitly, language is seen as a social tool created by different communities that continuously improve to fulfill communicative needs. This is the principal aspect that conditions individual behavior through the social communicative interaction that takes place in a situation determined by historical, geographic and cultural factors (Pavel, 1993, p. 23).

Authors, mostly from France and Quebec, Canada have distanced themselves from structuralism and from what they see as prescriptive Wüsterian terminology. They question the principles of terminology in a new terminological turn that is known as socioterminology

141

(Gaudin, 1993b, 2003). Socio-terminological reactions to the general theory of terminology propose that:

- Concepts and definitions evolve all the time because the disciplines where they belong evolve and develop over time meaning that concepts are not static.

- Polysemy and synonymy belong to the nature of language so they inevitably occur in specialized discourse.

- Specialized subject fields are impossible to define because almost all of them involve, in some way or another, interdisciplinary knowledge.

- Experts belonging to research groups in science and technology neither share the same professions nor interact with other subject specialists so that they do not form homogeneous groups.

As the term socioterminology indicates, this approach studies terminology within the real use of language and is clearly framed in a specific social context. The approach entails a descriptive method that replaces the prescriptive position proposed by the classic or traditional postulates. Socioterminology, defined in Gaudin's words as a "conception sociolinguistique" of the discipline (2003, p. 154), is directed towards the study of terms in relationship with the contexts in which they appear, that is to say the linguistic, pragmatic, social and historical contexts. It is, in fact, a sociolinguistic approach to terminology that takes into account the analysis of terms (emergence, formation, consolidation and relationships), considering them from a linguistic perspective in social interaction. In this sense, socioterminology is a practical discipline of terminology work that is based on the analysis of the social and linguistic conditions of the circulation of terms.

Socioterminology is mainly associated with the sociolinguistic circle of the Université de Rouen and represents the first opposing movement to the general theory of terminology stated above. Indeed, the use of the term socioterminology tends to determine the possibility, even the need, for a revision of the general theory of terminology, which socio-terminologists understand primarily as "une terminologie essentellement est-européene et wüstérienne" as stated by Gaudin (1993c, p. 294). The general criticism of traditional terminology, in Gambier's terms, is that "la terminologie n'est pas coupée de la pratique sociale" (Gambier, 1991a, p. 31). Therefore, the sociolinguistic aspect of terminology leads Gambier (2001, p. 107) to propose "une terminologie remise sur ses pieds" and Gaudin (1993c, p. 297) to

advocate for "une fille de la sociolinguistique" with the single purpose of taking into account the real social environment.

Socio-terminological ideas were first suggested by specialists in charge of language planning who worked on language standardization in academic or working environments. This approach can be traced back to the 1970s in France and Quebec, Canada. The term socioterminology was adopted at the beginning of the 1980s by Jean-Claude Boulanger and gained a conceptual depth in the 1990s with Yves Gambier, Louis Guespin and François Gaudin. According to Gaudin (1993c, p. 293) an important year for socioterminology is 1987 when Yves Gambier published his article "Problèmes terminologiques des pluies acides: pour une socioterminology" in the journal *Meta*, volume 32, issue 3. In fact, Gambier's paper was given at a conference on "La fertilisation terminologique dans les langues romanes" in October 1986, in Paris. The conference was organized by Françoise Algardy, Pierre Lerat et Jean-Piere van Deth. Gaudin considers that Gambier's article indicates the emergence of a theoretical effort, or at least the existence of an original and supported position, that one can connect to the term socioterminology. The link comes from combining sociolinguistics and terminology. Gaudin (1993c, p. 293) also states that it was, in fact, at the Université de Rouen, under the direction of Louis Guespin, that both the term and the concept began to emerge. Socioterminology was born from diverse terminographical practices with companies and administrations arising from the difficulty of specialized editing, from articles that describe a situation of terminological planning and, finally, from the problems found within the "wüsterian paradigm" (Gambier, 2001, p. 107). Representative authors in the field are Louis Guilbert, Jean-Claude Boulanger, Yves Gambier, Fançois Gaudin, Louis Guespin who have formed a social network in the field of socioterminology (see Castro-Prieto & Olvera-Lobo, 2007). Not all of them work at the Université de Rouen.

According to socioterminology, the first descriptions and regulations of standardization were based on a reductive terminological overview of the linguistic sign, and were characterized by the fact that every single concept corresponds obligatorily to a monosemic meaning that does not tolerate any synonymic competitor (Boulanger, 1995, p. 195). The fact that there is "permanent conflict between the theory of terminology and its socio-discursive

practice" has lead some terminologists to seek the bases of a socioterminology. Criticism of traditional terminology was born from the observation of terminological variation in written and oral discourse.

Socioterminology concentrates on many other theoretical aspects of terminology. For socioterminology, the concept is not a fixed entity placed before the discovery of designations (L'Homme, 2005, p. 1115). Rather, concepts are built in discourse where they suffer many tensions and changes according to social and historical variables (Gaudin, 2003). By the same token, Gambier (1987, p. 320) affirms that behind the dream of an unambiguous language profiled by the traditional terminology, an idealistic voluntarism is expressed which serves sometimes to shape intervention, the normative obsession of international terminological organizations. From the point of view of socio-terminologists, this idea leads to a dictatorial design of language that fixes norms to control language and blinds the evolution and the development of knowledge in discourse communities in practice. The normative idea also suggests competition between social actors about science and technology in a given society. Another problem socio-terminologists have found in the theoretical assertions of traditional terminology is that its idealistic rationalism and its mystic objectivism are in contradiction with both its methodology and its practice, which according to socioterminology must take into account terms in their social context (Gambier, 1987, p. 320).

Today, socioterminology has spread to South American countries such as Argentina, Uruguay, and Brazil. It has also reached Norwegian countries. Johan Myking, in particular, has developed a variant of socioterminology in Scandinavia. In Finland, Yves Gambier has contributed several publications in the field. In both France and Quebec, socioterminology has argued against standardization of language. According to Boulanger (1995, p. 195), socioterminology has developed along the lines of the concept of "aménagement linguistique", that is, language planning in the sense of Jean-Claude Corbeil (2007b):

> L'expression est aujourd'hui d'emploi universel pour désigner l'ensemble des mesures sociales qui influencent l'emploi de la langue par les locuteurs d'une même communauté linguistique, que ces mesures soient par un gouvernement ou qu'elles proviennent de l'initiative d'un organisme privé, par exemple une académie dont le modèle le plus renommé est l'Académie française. (p. 173)

But the concept of socioterminology is more precisely articulated within sociolinguistics and the broader concept of "glottopolitique" (Gaudin, 1993c, p. 294); the branch of political sociology, which is interested in the policies or political action of language, directed toward language or languages in conflict.

Socioterminology is based on sociolinguistic concepts and approaches (see Guespin, 1995, p. 210). The theoretical basis of the sociolinguistic approach to terminology which claims to be at the center of a scientific, industrial, commercial and linguistic approach is based on contestable postulates of the traditional theory of terminology as stated by Gambier (1987, p. 319). Gambier points out that some principles such as transparency, biunivocity, monosemy and the ideal motivated term are postulates which ignore polysemy and the possible degrees of equivalence from one language to another making thus ruling out synonymy.

Socioterminologists have found problems that the general theory could not solve. Gambier (1987) first stresses the fact that there cannot be terminology without history since concepts evolve as they change along with the realities they express and thus incorporate old knowledge. Furthermore, borders between fields of knowledge change and allow for new vocabulary. He then stresses that there cannot be terminology without social practices since discourse communities determine conditions of enunciation where terms are not objects in themselves that can be attached to limited definitions of any scientific or professional practice. Finally, he stresses that terminology is connected to the production of science and technology; concepts do not exist at all in abstract conceptual networks (Gambier, 1987, p. 320). Harsh criticism is also provided in Gambier (1991a). Gambier criticizes the "langue limpide" proposed by Wüster as created by monoreferential, motivated and transparent terms and concepts that represent a logical system within a subject field (Gambier, 1991a, p. 41). Postulates such as 'domaine', 'biunivocité', 'univocité', 'synonymie' "ne permettent pas à la terminologie de faire face aux réalités terminographiques : problèmes de la définition de notions, du découpage des termes, de l'inflation terminographique, du contexte, des niveaux de langue qui ne sont pas l'apanage exclusif de la langue dite générale" (Gambier, 1991a, p. 43). He concludes that the general theory of terminology is merely utopian.

Consequently, from the point of view of the analysis of a particular linguistic situation and the form of intervention on language practices, socioterminology has a double aim (Gaudin, 1993c, p. 298). On the one hand, socioterminology describes a particular linguistic situation; on the other, it explains language practices. Concerning its objectives, socioterminology seeks:

1.   To analyze the needs of language players (technicians, translators, editors, professors, researchers and so on) and the relation between scientific and technical production

2.   To understand the conditions and difficulties of knowledge dissemination taking into account the conditions and difficulties of the emergence of concepts and terms

3.   To strengthen the evolution of terminology

4.   To study the term from the linguistic point of view, towards social interaction since traditional terminology did not explain linguistic behavior of users (Faulstich, 1996, p. 240)

Socioterminology also takes into account the process of language planning for the reason that it inherited many conceptual and methodological features from sociolinguistics. In this sense, language planning is taken as a management instrument to search for solutions to language problems (e.g., Quebec and Catalonia as previously stated). In fact, terms and concepts have real existence in discourse communities. Similarly, any communication is anchored in a social group. Socioterminology takes into account scientific and technical discourse between professionals and laypersons, and considers oral and written language variation in subject fields. Language is viewed in terms of function and its purpose in terms of society and language.

The point of view of the Rouen research group is that socioterminology must be based on sociolinguistics, a more mature discipline, in order to go beyond the precepts of the general theory of terminology that, according to socioterminologists has reached its limits. Yves Gambier (1987) made a plea in favor of the creation of socioterminology, which he presents as the means for terminology to overcome the set of crises it is currently experiencing. The existence of this new approach to terminology comprises a complex of practical attitudes and theoretical developments (Guespin, 1991, p. 67). According to L'Homme (2005, p. 1115),

socioterminology is also interested in terminological structure in a manner that differs from that proposed by the general theory of terminology. Although this issue is not fully elaborated, the circle of Rouen proposes a dictionary model in which lexical, rather than conceptual relations are described based on "semantic relations" (Gaudin, 2003, p. 150). First, socioterminology incorporates the study of synonymy and polysemy against the traditional idea of monosemy as the only desirable and, therefore, analyzable phenomenon. Second, terminology and linguistics are no longer interested in sectioning the knowledge into homogenous and exact parts. Socioterminology therefore questions the existence of specialized subject-fields with precise limits (Boulanger, 1995, p. 198) and prefers to consider science and technology as knowledge nodes. Finally, socioterminology moves away from the synchronous study of specialized language posited by Gaudin (1995).

Sociolinguistically speaking, socioterminology privileges descriptive methods over prescriptive ones. Before taking language planning decisions this method needs a long period of observation not only from the point of view of the practitioner but from the outsider (Guespin, 1993, p. 218). The observation of terminological variation implies engaging in the study of scientific and technical vocabulary in its real usage and in all scientific and technical communities (Guespin, 1993, p. 219).

From a methodological point of view, socioterminology proceeds from a descriptive position (Gaudin, 1993c, p. 295). It departs from traditional methods such as discussions with experts, works on limited corpora, disregards the oral dimension and constitutes globally, a more linguistic attitude. Linguistics, in its primarily descriptive branch, supposes that terms be studied in their interactive and discursive dimension. The terminologist apprehends the concept from the lexical stock provided by discourse (L'Homme, 2005, p. 1115). This step, clearly semasiological, conflicts with that recommended by the general theory of terminology. In addition, socioterminology highlights the importance of variation, a linguistic fact that is not a problem to be solved, but rather a phenomenon that is important to describe.

The "permanent conflict between the theory of terminology and its socio-discursive practice" (Boulanger, 1991, p. 24) has made terminologists look for a sociolinguistic approach to terminology. According to Gaudin (1993c, p. 294), Gambier's (1991b) "prolégomènes" gave

shape to socioterminology and to its strong theoretical position. As stated by Guespin (1995, p. 211), there are at least two parameters that show that terminological practices needs to change. The first deals with the accelerated scientific and technical revolution and its denominative requirements. The second is the change in the relationships between science, technology and production, an aspect, which according to Guespin, is seldom taken into account by terminologists. To meet the new terminological needs, Gambier (1991b) distinguishes three levels where the sociolinguistic dimension enriches terminology: in terminographic work itself; in terminology with standardizing aims (without the reducing vision of terminology usage); in terminology taken from the observation of linguistic practices (see Gambier, 1991b, p. 9).

Among publications in the field, François Gaudin and Allal Assal edited in 1991 an issue on "Terminologie et sociolinguistique" in the *Cahiers de Linguistique Sociale*. The same year, Monique C. Cormier and Jacques Lethuillier (1991) edited volume 36, issue 1 "La terminologie dans le monde : orientations et recherches" in the journal *Meta* where Gambier published a classic in the field (see Gambier, 1991b). For an overview of the socioterminology points of view of the Rouen group, it is interesting to consult the special issue on "Socioterminologie" in the journal *Le Langage et L'homme*. The issue, Vol. 28, No. 4 was edited by Yves Gambier and François Gaudin in 1993. In the same year, François Gaudin published his doctoral dissertation entitled *Pour une Socioterminologie: Des Problèmes Sémantiques aux Pratiques Institutionnelles*. Other contributions on the topic of socioterminology were published in 1995 in the special issue of *Meta*, Vol. 40, No. 2 under the title "Usages sociaux des termes: théories et terrains" edited by François Gaudin and Jean-Claude Boulanger. In 2003, François Gaudin published his book *Socioterminologie: Une Approche Sociolinguistique de la Terminologie*, an updated version of his 1993 work. In 2007, the ISO published the first edition of the *Practical guidelines for socioterminology* ISO/TR 22134:2007, which are the guidelines for socioterminology principles, methods and vocabularies. It contains the general principles of socioterminology.

According to socio-terminologists, the objective of socioterminology is, first, that terminology theory and practice should recognize the cognitive and social aspects of terminologies, and second, that terminology research should be based on the actors of

communication and their communicative situations, on the treatment and dissemination of terminologies as well as on terms and concepts.

3.2   Communicative Approach to Terminology

As an alternative to the postulates of the general theory of terminology, María Teresa Cabré (1999a) has brought together a series of articles that are presented as the foundation of a communicative approach to terminology. The approach is mostly distinguished by a linguistic component indicating as the main topic terminological variation. Cabré (1999a) proposes that in the communicative approach, jargon (specialized technical terminology) is an ordinary language and that terms are lexical units that belong to the lexicon of language. The emphasis of the approach is on the pragmatic conditions of specialized communication where the cognitive, the communicative and the linguistic functions of terminology come into play.

María Teresa Cabré is the main representative of this approach. She worked at the University of Barcelona from 1970 to 1993 and then joined the faculty of Pompeu Fabra University, where she directed the Catalan Linguistics Unit in the Translation Department. She directed and founded, as well, the Institut Universitari de Lingüística Aplicada (IULA). In the IULA, she is the coordinator of the language processing research group and the research unit for lexicon structure, neology and terminology. She is also a founding member of the Centro de Terminología de la Lengua Catalana (TERMCAT) of which she was the director from 1985 to 1988 (see Cabré, 1998). It is, therefore, mostly in the work of Cabré (1999a) and her colleagues (e.g. Rosa Estopá, Judit Feliu, Mercè Lorente, Judit Freixa and Carles Tebé) where the theoretical and methodological pillars of the communicative approach to terminology are found. The article "Theories of Terminology - their Description, Prescription and Explanation" published in 2003 also contains the basis of this approach. In brief, most of the publications related to the communicative approach to terminology come from researchers at the University of Pompeu Fabra in Spain.

Although Sager (1990) had already discussed the cognitive, linguistic and communicative dimension of terms, Cabré advocates a communicative approach to terminology in which "each one of the three dimensions [the cognitive, linguistic and

communicative], while being inseparable in the terminological unit, permits a direct access to the object" (Cabré, 2003a, p. 187). The communicative approach to terminology is an interdisciplinary approach enriched by the theory of knowledge, the theory of communication, and the theory of language as proposed by Cabré (1999a). It was motivated by the insufficiencies of the general theory of terminology and it has transcended its developmental stage. This approach assumes that communication is not uniform because there is denominative and conceptual variation. From both theoretical and methodological points of view, the communicative approach relies mostly on linguistic variation.

The communicative approach to terminology adopts a linguistic viewpoint to specialized discourse. It considers specialized discourse as the manifestation of natural language and therefore studies terminological variation as a phenomenon that belongs to the reality of specialized communication. In this sense, terms disseminate knowledge, determined by their position in a concrete communicative situation. The communicative approach to terminology starts from the assumption that "real" specialized communication is opposed to "standardized" specialized communication.

In terms of Cabré (2001b, p. 32), the main characteristic of the communicative approach is that it takes into account the representation of knowledge *in vivo,* the spontaneous and natural production of language against the representation of knowledge *in vitro,* standardized language. The analysis of the representation of knowledge *in vivo* favors the descriptive method applied by the approach instead of the prescriptive one. That is why the approach deals with whether one wants to control linguistic variation or not. The approach addresses terminology not as a denominative activity in the sense of identifying concepts and naming them but as a communicative activity where a term represents a specific concept depending on the situation and setting (Cabré, 1999c, pp. 109-127).

Quebec and Catalonia, among other places, share the fact of considering their respective languages, French in Quebec and Catalan in Catalonia, as the fundamental feature to their national realities. Their context is characterized by economic and cultural internationalization, while being in contact with two languages of greater international dissemination, English and Spanish. The Charter of the French Language, the Office de la

langue française (OLF), now Office québécois de la langue française (OQLF), and the linguistic policy of Quebec constituted a model of reference for Catalonia. In fact, according to Cabré (2001a, p. 135), Quebec was the source of inspiration for terminology organization and terminology work in Catalonia. This influence is evident in the commonalities of terminological work in both linguistic communities. This influence started in the 1980s with the work of well-known Quebec terminologists such as Jean-Claude Corbeil, Pierre Auger and Jean-Claude Boulanger. Elements of the Quebec approach that influenced the Catalan approach were the conception, application, social function, socio-professional organizations and role in language planning (aménagement linguistique) of terminology.

Three terminology works contributed to the development of terminology in Catalonia. Those mentioned by Cabré (2001a) are, *Méthodologie de la Recherche Terminologique* by P. Auger and L.-J. Rousseau (1978), *Introduction à la Terminologie* by G. Rondeau (1981) and the *Manuel de Terminologie* by H. Felber (1987). It was not until 1985 with the creation of the Centro de Terminología de la Lengua Catalana (TERMCAT) that Catalan terminology was officially established. Their first interest was in promoting the usage of Catalan in science and technology, and in establishing a standardized and internationally recognized terminology. The inspiration for Catalan terminology come from Quebec and from Vienna where Wüster's ideas were being implemented at the same time (see chapter 2, section 2.4.5.1). Nevertheless, as both Quebec and Catalonia put their terminological practices into work, they witnessed the birth of a more socio-terminological approach in Quebec and a communicative approach in Catalonia. Both approaches distinguish themselves from the approach proposed by Wüster, as stated by Cabré (2001a, p. 136).

In the communicative approach to terminology, it is considered that terms are part of natural language whose meaning changes over time. This idea conflicts with one of the principles of the general theory of terminology. According to one of the tenets of the general theory of terminology, meaning of common language words may change whereas the meaning of terms must remain unchanged. Although, the basic linguistic factor is the nature of terms, the main criticism of the general theory of terminology coming from the communicative approach is that it does not take into account the complexity and the diversity of specialized

units in their global communicative environment (Cabré, 1999a, p. 70). That is why "at the core of the knowledge field of terminology we, therefore, find the terminological unit seen as a polyhedron with three viewpoints: the cognitive (the concept), the linguistic (the term) and the communicative (the situation)" (Cabré, 2003a, p. 187). In this sense, the communicative approach moves away from the general theory of terminology as it considers different angles or "doors" for the analysis of terminology. According to Cabré's terminological polyhedron, the general theory of terminology accounts for just one dimension of the polyhedron, namely the conceptual aspect, and consequently, it fails to consider the other dimensions of the polyhedron. This does not mean that the general theory of terminology is in danger because terminological units are such complex and multidimensional phenomena that they can hardly be analyzed from all the "doors" at once. From the point of view of the communicative approach, it means, however, that the general theory of terminology may only be an ancillary component in a more comprehensive theory.

Principles of the communicative approach are summarized in Cabré (1999a, pp. 122-124, 131-133):

- The object of study is the terminological unit (TU) itself, which is part of natural language.

- TUs are lexical units that are activated by their pragmatic conditions and are adjusted to a given type of communication.

- TUs are also units made of form and content in which content and form match.

- Concepts in a given specialized area maintain different types of relationships with each other.

- The value of a term is established by the place it occupies in the conceptual structure of a given field according to the criteria established in a terminology project.

- The objective of theoretical terminology is to provide formal, semantic and functional descriptions of units that can acquire terminological value.

- The objective of applied terminology is to compile the units of terminological value.

- The purpose of compiling and analyzing units with terminological value in a given field is diverse and allows many applications.

In addition, the communicative approach states that each terminological unit, immediately or remotely, searches for a communicative objective. Cabré states that the main

objective of the communicative approach is basically "to search for a new approach that would help to account for the complexity of terminological units within the framework of specialized communication" (Cabré, 1999c, p. 69). Moreover, harmonization of terminological variation, description of real terminological use, diversity in the design of terminological applications adapted to users, and linguistic engineering must prevail in the approach.

Regarding the working method, Cabré indicates that the communicative approach is both theoretically coherent and flexible enough to account for the range of situations and goals where it applies. The method is centered on *adaptability* because each terminology work adopts its own method according to subject field, objective, context, and available sources. The working method is not rigid; on the contrary, it is flexible although it does not violate the principles (Cabré, 2001b, p. 32). Additionally, it is certainly a descriptive method that entails the compilation of real TU used by specialists in different communicative situations (Cabré, 2001b, p. 34). The diversity of communicative situations presupposes a representative and heterogeneous corpus. Finally, the method has to take into account the main focus of the approach, which is the linguistic and conceptual variation as the main characteristics of terminological data (see Cabré, 2001b, p. 36).

Cabré (1999a, pp. 12-13) suggests that it is impossible to account for the complexity of terminology with a single theory and that instead a number of integrated and complementary theories are required to deal with the different components of terms. In later works, Cabré (2000a, 2002, 2003a) ventures to propose a model, metaphorically named, "the theory of doors." "This model attempts to represent the plural, but not simultaneous, access to the object; and in such a way that, whether starting from the concept or the term or the situations, the central object or terminological unit, is directly addressed" (Cabré, 2003a, p. 186). It claims that the research object of terminology is not the concept, but rather the terminological unit and it emphasizes that each one of the three dimensions (cognitive, linguistic and communicative), while being inseparable in the terminological unit, permits a direct access to this object. Cabré's proposal sought to try to create the basis for a new, open theoretical model, which allows for the description of terminological units in all their complexity and for their location within a multidimensional linguistic and textual theory.

In the IV Congreso Internacional de la Lengua española held in Colombia in 2007, whose slogan was "The present and future of Spanish: Unity and diversity," Cabré's contribution focused on the possibility of organizing Spanish terminology as a whole. At the end of the presentation, Cabré concluded that it seems definite that it is only in the countries with more than one official language, in the countries with minority or minimized languages (situations of linguistic conflict) or in international organisms, that terminology is considered as necessary. She adds, however, that in countries whose language seems assured by the number of speakers or by its economic and technological power, terminological consciousness is very weak (see Cabré, 2007b).

3.3   Sociocognitive Approach to Terminology

The sociocognitive approach to terminology has its origins in the Centrum voor Vaktaal en Communicatie (CVC), a research group that belongs to the Department of Applied Linguistics of the Erasmushogeschool Brussel. The research group is co-ordinated by Rita Temmerman and its research concentrates on languages for special purposes (LSP). Terminology research carried out by this group focuses mainly on case studies of categorization and naming in the life sciences such as biology, genetics, microbiology, molecular genetics, biochemistry, biotechnology, as well as in social sciences.

Although vaguely defined by Hjørland (2007), the sociocognitive approach to terminology grew out of a strong opposition to the traditional theory of terminology propounded by the Vienna, Prague, and Soviet schools, and to the objectivist premises implied within that point of view. The approach is presented as another solution for the insufficiencies of the traditional theory of terminology. Based on a sociocognitive approach, the terminological reality that the research group of the Centrum voor Vaktaal en Communicatie (CVC) faces in specialized texts is very different from that described by the traditional approach to terminology. In order to carry out a descriptive study, Termmerman (2000b) offers a new methodology, rooted in cognitive semantics.

By analyzing a corpus of scientific texts, Temmerman (2000a) realized that the principles of the Vienna School of Terminology did not account for the terminology of the life

sciences. The author's findings showed some inconsistencies in relation to what was stated by the traditional theory of terminology. First, the majority of the terms were not clearly delineated. Second, very few of these terms were unambiguous; it was not possible to define a concept based on its position in a hierarchical structure or system of concepts. Third, synonymy and polysemy were present. Finally, category and meaning of these terms changed over time. Temmerman's findings led her to conclude that the traditional terminology impedes a pragmatic and a realistic description of a large number of categories and terms in the life sciences for which standardization proved to be less essential. Furthermore, traditional terminology principles were not sufficient to establish a realistic description of life sciences terminology (Temmerman, 2000a, p. 58).

Temmerman's criticism of traditional terminology (Figure 6) is directed, first, at its objectivist views in which reality is independent of human understanding. Second, she criticizes its dogmatic nature whereby the application of traditional terminology principles seem to be unquestionable. Third, she criticizes its view of standardization by which it concentrates on making terminology efficient and unambiguous rather than on facilitating subject field communication (Temmerman, 2000b, pp. 16-17). Temmerman (2000b, p. 19), therefore, holds that the scientific study of terminology gets confused with the pragmatic activity of standardization.

Figure 6. Principles of Traditional Terminology (Temmerman, 2000b, p. 16)

Principles of traditional Terminology	**Our observations concerning the terminology of special language**
First principle: Terminology starts from the concept without considering language.	Language plays a role in the conception and communication of categories.
Second principle: a concepts is clear-cut and can be assigned a place in a logically or ontologically structured concept system.	Many categories are fuzzy and can not be absolutely classified by logical and ontological means.
Third principle: a concept is ideally defined in an intensional definition.	An intensional definition is often neither possible nor desirable.
Fourth principle: a concept is referred to by one term and one term only designates one concept.	Polysemy, synonymy and figurative language occur and are functional in special language.
Fifth principle: the assignment concept/ term is permanent.	Categories evolve, terms change in meaning, understanding develops.

Figure 1.1. *Contrast between the principles of traditional Terminology and the reality of the terminology we have been studying in the special language of the life sciences.*

Temmerman does research on "the terminology of the life sciences in linguistic contexts, i.e. in textual information" (Temmerman, 2000b, p. 34). The observations were a source of inspiration for defining a descriptive theory of terminology based on sociocognitive principles (see Temmerman, 2000b, p. 16). Temmerman (1998/1999, 2000a, 2000b, 2001) formulated five principles for terminology to replace the traditional ones that were shown to be impractical as they only concentrated on terminological standardization, and not on the realistic description of the meaning of terms in the life sciences. The main principles of this approach reveal a combined semasiological and onomasiological perspective. Two ideas are of particular importance: that synonymy and polysemy play a functional role in specialized languages and that the diachronic approach is unavoidable (Temmerman, 2000b).

The sociocognitive approach is inspired by cognitive semantics and by sociolinguistics. In cognitive semantics, the lexical meaning corresponds to a concept held in the mind and based on personal understanding; in this sense, meaning does not exclusively refer to a thing in

156

a real or possible world as proposed by the traditional theory of terminology. Cognitive semantics "elaborates on the full potential of the interaction between the world, language, and the human mind; and from the insight that the elements of the semantic triangle function in a social setting" (Temmerman, 2000b, p. 61). In sociolinguistics, language is seen as a cognitive instrument and as sociological data in the process of understanding.

The sociocognitive approach aims at offering new principles and methods for analyzing and describing terminological data. Its main support covers textual data and corpus-based scientific discourse. It starts from the unit of understanding (UU); a term assigned "pour désigner les catégories de structure prototypique et pour les notions clairement délimitables" (Temmerman, 2000a, p. 59), rather than the concept. In general, units of understanding have a prototype structure and are in constant evolution. In the life sciences, categories that do not show prototypical structure are considered concepts as defined by traditional terminology. On the other hand, "units of understanding which show prototype structure are categories" (Temmerman, 2000b, p. 43) which are used in the process of classification.

The sociocognitive approach developed by Temmerman supports a model for category analysis that includes synchronic as well as diachronic accounts for the meaning of concepts. Accordingly, based on an empirical study of categorization and lexicalization processes in a corpus of scientific publications on the life sciences, the approach questions the principles of traditional terminology. As stated by Temmerman, the sociocognitive view "takes a semasiological approach to the study of categories in the life sciences by starting from the terms that designate units of understanding and investigating how these units of understanding and their designations are defined and explained in texts" (Temmerman, 2000b, p. xiv). This view promotes a methodology for concept analysis that reflects how terminology is used within discourse communities. The alternative starting point is not the concept but the term as found in texts written by field specialists (Temmerman, 1997b, p. 53). Three methods of terminology description are used in this approach: prototype structure analysis, cognitive model analysis and diachronic analysis (Geentjens, Temmerman, Kerremans, & De Baer, 2006, p. 10); these methods are part of cognitive semantics as Temmerman (2000b, p. 229) affirms.

157

The sociocognitive approach plan is to cooperate with cognitive semantics, particularly with prototype theory and sociolinguistics in order "to contribute to a better understanding of the role of lexicalizations in communication" (Temmerman, 1997b, p. 50). From a sociocognitive point of view (see Figure 7), terms represent categories, which are as fuzzy and dynamic as those represented by words in general language (Temmerman, 2000b, p. 223). The idea behind this statement is to go beyond what Temmerman defines as the "objectivist structuralist principle" of traditional terminology given that words cannot be held to have meaning objectively but can only be understood in a linguistic communication process (Temmerman, 2000b, p. 42).

Figure 7. Traditional and Sociocognitive Terminology (Temmerman, 2000b, p. 223)

Traditional Terminology	Sociocognitive Terminology
Principle one: Terminology starts from concepts which can be clearly delineated.	**Principle one:** Sociocognitive Terminology starts from units of understanding which more often than not have prototype structure (6.1.1.1).
Principle two: Clear-cut concepts can be attributed a place in a logical or ontological concept structure.	**Principle two:** Understanding is a structured event. A unit of understanding has intracategorial and intercategorial structure and it functions in cognitive models (6.1.1.2).
Principle three A concept can be defined in an intensional definition (superordinate concept and differentiating characteristics) and/or extensional definition.	**Principle three** Depending on the type of unit of understanding and on the level and type of specialisation of sender and receiver in communication, what is more essential or less essential information for a definition will vary (6.1.1.3).
Principle four: A term is assigned permanently to a concept. It is believed that ideally one term only should be assigned to one concept.	**Principle four:** Synonymy and polysemy are functional in the progress of understanding and therefore need to be described (6.1.1.4).
Principle five: a) Concepts and terms are studied synchronically. b) The relationship between concept and term is arbitrary	**Principle five:** a) Units of understanding are constantly evolving. The historical periods in their evolution may be more or less essential for the understanding of a unit. b) Cognitive models (e.g. metaphorical ICMs) play a role in the development of new ideas which implies that terms are motivated. (6.1.1.5)

Figure 6.2. *Contrast between the principles of traditional Terminology and the principles of sociocognitive Terminology.*

Research on sociocognitive terminology started at the end of the 1990s with Rita Temmerman's doctoral dissertation on terminology and standardization at the Catholic University of Leuven. It focused on language and categorization in the life sciences. The

dissertation was published as *Towards new ways of terminology description. The sociocognitive approach* (see Temmerman, 2000b). One of her first articles deals with "questioning the univocity ideal" and stresses the difference between sociocognitive terminology and traditional terminology (Temmerman, 1997a). In the same year, Temmerman published another article on the process of lexicalization in the life sciences (Temmerman, 1997b). Subsequently, she gave reasons "why traditional terminology impedes a realistic description of categories and terms in the life sciences" (Temmerman, 1998/1999). In 2000, she published an article describing a realistic theory of terminology (Temmerman, 2000a). The book *Towards new ways of terminology description: The sociocognitive approach* (2000b) is the first comprehensive overview of the approach. After the publication of this book, other presentations and articles have appeared on the topic (Temmerman, 2001, 2003a, 2003b; Temmerman & Kerremans, 2005) and on the methods and applications of the approach (Geentjens et al., 2006; Temmerman & Kerremans, 2003).

In summary, the sociocognitive approach to terminology is a growing field that is covering a wide array of topics on terminology. It focuses on the implementation of the sociocognitive theory of terminology (Temmerman, 2000b). Its attention is also centered on studying metaphors, on creating multilingual terminological resources, on studying terminological variation, on developing terminology software, and on working on terminological information for ontology structures. Resulting from the research activities, the group has developed the termontography approach in which theories and methods for multilingual terminological analysis are combined with techniques and guidelines for ontology engineering. Software tools now support this approach. The term "termontography" comes from terminology, ontology and terminography. Its purpose is to describe ontologies with (multilingual) terminological information and to structure terminological resources with ontologies.

In general, there is some evidence to suggest that terminology needs to look for new directions to accomplish a more descriptive competence. As Bertha Toft (2001, p. 127) puts it, sociocognitive terminology "is theoretically innovative, showing in a convincing way how the results of modern cognitive science can be integrated and applied in terminology."

Temmerman's work is indicative of the many roads that can be taken when studying terminology. However, it is also pertinent to put into perspective the limited scope of the approach. If one is to believe Temmerman and her emphasis on the insufficiencies of traditional theory of terminology for doing terminological work in the life sciences, then it would be expected that every discipline would require its own theoretical approach to terminology. Thanks to the efforts of this approach the methodology is applied to other fields of knowledge such as social sciences among others.

3.4   Cultural Approach to Terminology

Research on the cultural approach to terminology is inspired by the specific situation of African languages and societies mentioned by Diki-Kidiri (2001). Diki-Kidiri (2000b, p. 27) suggests that it is the way to see the world that determines the way people classify, order, name and categorize everything that is perceived or conceived, and in fact their own identity. Diki-Kidiri adds that culture is what conditions the way people perceive the world and that the cultural approach to terminology takes into account that man is the only one with access to the real world through mentally- and culturally- conditioned representations. Because of globalization and the fact that "la langue et au cœur du développement" (Diki-Kidiri, 2008d), the development of scientific terminology in African languages needs an important work in terminology. This development requires a new working method based on a cultural approach to terminology, an approach that re-evaluates certain aspects of the classic theory of terminology i.e. the Vienna School of Terminology (see Diki-Kidiri, 2008b; 2008c). Cultural terminology has already a rich bibliography and though it differs methodologically from traditional terminology, it is true that Wüster's work is rarely criticised and little cited or mentioned in its publications which may account for why little reference to Wüster or his work is made here. The rejection of classic terminology is basically because it was designed to satisfy the need for technical standardization which was the major challenge at Wüster's time. The cultural approach of more contemporary times looks to the way of living of a group or community for understanding terminology.

The cultural approach to terminology was born from the necessity to manage languages by focusing on their development, especially in Sub-Saharan Africa. Marcel Diki-Kidiri, the leader of this approach, best described what this cultural approach is about in the summary submitted for the round table on cultural terminology for the colloquium: *Terminologie: approches transdisciplinaires* held in Gatineau, Canada in May 2007:

> [La terminologie culturelle] est fondée sur la manière dont l'être humain acquiert de la connaissance en s'appropriant chaque expérience nouvelle tout au long de sa vie. Par cela il construit son univers, depuis ses habitudes individuelles jusqu'à ses comportements sociaux grégaires et communautaires. La relation de la terminologie avec la cognition, la psychologie, la sociologie, l'anthropologie culturelle, le droit, la sémasiologie, la linguistique et la communication entre autant en ligne de compte pour le développement de la terminologie que la définition des concepts, la construction du sens et des dénominations. La terminologie culturelle se trouve être ainsi l'un des portails interdisciplinaires conduisant à l'étude du terme dans la perspective d'un développement humain intégral.

Diki-Kidiri, a linguist from the Central African Republic, living and working in France, and his colleagues Edema Atibakwa and Henry Tourneux, work at the Centre National de la Recherche Scientifique (CNRS). Their research is centered in Langage, Langues et Cultures d'Afrique Noire (LLACAN). They are devoted to the promotion and development of the Sango language, particularly its use with computers and in cyberspace. They have found that the primary problem with the African languages is finding a way to name new realities. These new realities exist independent of culture, since they are generally created outside the African context. As Diki-Kidiri (2002) holds, the approach considers culture as a set of lived experiences and knowledge generated by a human community that lives in the same space and time and shares the same culture. For that reason, new things, that is, everything that does not comprise the base of experiences and knowledge registered in memory is the reflection of the diversity of cultures as much in space as in time. Man only has access to that real world by means of mental representations, which are culturally conditioned. Similarly, Basey Antia's research interests are in the area of cultural terminology. Antia (2000) and Antia and Kamai (2006) have concentrated efforts on issues regarding terminology and language planning in Africa. Although Antia's research is rooted in the cultural approach to terminology, he does not criticize Wüster's approach. His approach to the development of national languages in

161

Africa as a developing world takes into account cultural and communicative dimensions of terminology in order to provide access to specialized knowledge. Both Antia and Diki-Kidiri began terminology research from a cultural approach at the beginning of the 2000s.

The development of African languages passes necessarily through an important work in terminology and neology in all specialized fields of knowledge consistent with Diki-Kidiri (2000b). The needs can be met by preparing these languages so they can optimally express the realities of modern world and the realities of Africa in the present day. For cultural terminology, neology takes an important place in this process. Suffice it to add here that for Wüster (1979b, 1979c), terminology is defined as the systematic study of designation of concepts. As Diki-Kidiri puts it, "la pêche aux néologismes se fait essentiellement dans des productions orales, notamment à travers la radio et la télévision, et secondairement dans des publications issues d'enquêtes auprès de détenteurs de connaissances traditionnelles" (Diki-Kidiri, 2007a, pp. 21-22). The approach to terminology and specialized languages that provides a theoretical framework for cultural terminology is based on the principles of descriptive linguistics. The preparation of African languages demands a new working method based on a cultural approach to terminology, an approach that takes into consideration some differences between classic terminology (Wüster's onomasiological approach) and cultural terminology as seen in Figure 8.

Figure 8. Classic Terminology - Cultural Terminology (Diki-Kidiri, 2007, p. 15)

1.3.1 Comparaison entre la terminologie classique et la terminologie culturelle

Points à comparer	Terminologie classique	Terminologie culturelle
Objectif principal	La normalisation internationale des termes.	L'appropriation du savoir et des technologies.
Place de la culture	Elle est exclue du champ de la terminologie.	Elle est au coeur de la démarche terminologique.
Conception du terme	Biface : concept/signifiant.	Triface : concept / percept / signifiant.
Relations sémantiques	Bi-univocité stricte entre le signifiant et le concept. Il ne peut y avoir de synonymie absolue.	Intégration de la polysémie, de la synonymie et de l'homonymie.

In Diki-Kidiri's words (2000b, p. 27), the cultural approach takes into account, in its theoretical foundation and in its working method, socio-cultural, historical, phenomenological and psychological dimensions, as well as linguistic and technical dimensions. Some fundamental concepts in this approach refer back to the linguistic sign and to the term. The linguistic sign in relation to the signifier and the signified can be arbitrary though it can also be motivated as it becomes a term, that is to say, when the new technical name describes a concept that has previously been analyzed. The term is considered a linguistic sign yet the cultural approach to terminology redefines the linguistic sign as a unit with three components: the signifier, the signified and the concept (Diki-Kidiri, 2000b, p. 29). The difference between the signified and the concept allows the cultural approach to conceive multiple and particular perceptions of the same object. These perceptions are culturally motivated, and as a result, everything is more easily interpreted and easily understood when people share the same symbolic references (see Diki-Kidiri, 2000b, pp. 28-29).

Designation is another important concept in the cultural approach as it entails the study and the analysis of motivation, metaphorization, and word formation. General language and

specialized language are also taken into account with the nuance that "les langues de spécialités ne sont donc que des variétés professionnelles de discours au sein d'une même langue générale. On devrait donc logiquement considérer ces variétés professionnelles comme des discours de spécialité, et non comme des langues de spécialité" (Diki-Kidiri, 2000b, p. 29). In other words, instead of accounting for specialized languages, cultural terminology suggests specialized discourse.

As Diki-Kidiri (2001) states, the cultural approach chooses to redefine the linguistic sign and to take the culture as the center of the approach. From reading Diki-Kidiri (2002), one can assume that the concept addresses a more objective and consequently a universal representation of objects, whereas the signified depends more closely on particular perceptions of each culture. It can be said that, for the same given object, the concept is the essential idea whereas the signified is the point of view. Diki-Kidiri (2002) concludes that it is necessary to recognize that the unique binary relation signifier/signified is unsatisfactory to describe the term in all its complexity. That is why, within the cultural approach (Diki-Kidiri, 2000a, p. 6), the term is analyzed as a linguistic sign with three components: a signifier and a signified (limited the lexical semantics) and a concept (dealing with the class of objects). Nevertheless, for cultural terminology, terms will always be considered linguistic units that belong to a natural language.

Cultural terminology "a pour objectif principal l'appropriation de nouveaux savoirs et savoir-faire qui arrivent dans une société donnée. Elle permet à cette société de trouver le mot juste pour exprimer chaque concept nouveau en puisant ses ressources linguistiques dans sa propre culture et selon sa propre perception du réel" (Diki-Kidiri, 2007, p. 14). Whatever the object, one can observe diversity in its perception, this happens because there is variety of cultures. Being aware of this diversity, as Diki-Kidiri (1999a, p. 66) states, is the first step for a procedure that leads to the elaboration of a methodology of terminology management.

The methodology used in this approach deals first with the development of an outline for the appropriation of knowledge from the point of view of terminology as a discipline and second, with translation strategies. There are two types of methodologies: research methodology and the methodology for the production of terminology. Research methodology

requires pluridisciplinary work that includes linguists as well as subject-area specialists in the different languages and different cultures. The methodology for the production of terminology (see Diki-Kidiri, 2000b, 2001) has very clear principles: to define the social framework and the research objectives, to work preferably with a set of terms within a system of concepts, to study their history, their semantic evolution and their use. It will also be necessary to collect and to provide all potential equivalents (i.e. development or elaboration of terminology), analyze them critically paying special attention to connotation and formation. If equivalents are not found for the target language, a neology creation or a loan will be given. After these steps, equivalents will be evaluated with native speakers and with subject-field experts. Finally, standardization will take place. It will consist in selecting, when possible, a unique term for a unique concept. The final step will be to standardize. It implies the dissemination of standardized terms within the user environment and the provision of all appropriated technical support. In the procedure to be followed, the most important element is to clearly know the objectives of the methodology (Diki-Kidiri, 2000b, pp. 27-28):

- To contribute to the development of a terminological theory that takes into account cultural diversity and that preserves identity needs of different human communities
- To develop a methodology for the elaboration, production, and implantation of terminologies in order to efficiently develop African languages and cultures

Up to this point, it is important to clarify that for cultural terminologists, terminology

> n'est plus à voir comme une simple nomenclature à constituer puis à normaliser. Sans chercher à révolutionner la discipline, cette approche culturelle, nouvelle en terminologie, veut néanmois inverser la hiérarchie des étapes habituelles du modèle occidental par cette formule : *la culture conditionne la construction et la perception des concepts, lesquelles, à leur tour, en déterminent la définition et, en dernier lieu, la dénomination.* (Diki-Kidiri, 2008a, p. 11)

By the same token, the cultural approach to terminology (see Diki-Kidiri, 1999a) advocates, that for translating, it is always necessary to do a diachronic and a synchronic comparative research so that African languages are equiped to express modern, technological and scientific realities, mostly those that do not exist in the African world (1999a, pp. 61-63). In this sense, terminology is considered as one of the crucial activities for developing languages and for adapting them so they can adequately express new needs (Diki-Kidiri, 1999b, p. 73). The cultural approach seeks to utilize terminology that can contribute better knowledge of and a

more relevant development of technology (Diki-Kidiri, 1999b, p. 72). The proposal is to transform terminology into a discipline for knowledge creation and the appropriation of a particular culture (Diki-Kidiri, 2000b, p. 27).

The cultural approach to terminology has a short but rich history. From 1999, Marcel Diki-Kidiri has published articles dealing with terminology and its relationship to society and culture. The first two articles "La diversité dans l'observation de la réalité" and "Terminologie pour le développement" were published in the book *Terminología y modelos culturales* (1999b), edited by María Teresa Cabré. In 2000, the journal *Terminologies Nouvelles* (Diki-Kidiri, 2000a) concentrated on Terminologie et diversité culturelle where Diki-Kidiri wrote the "avant-propos" and an article describing the cultural approach to terminology. In 2001, an article describing the methodology for the cultural approach to terminology was published in the journal *Actualité Scientifique* edited by André Clas, Henri Awaiss and Jarjoura Hardane (Diki-Kidiri, 2001). The subject of the issue was "L'éloge de la différence: La voix de l'autre." In 2002 the first Spanish article on the topic was published under the title "La terminología cultural fundamento de una verdadera localización" (Diki-Kidiri, 2002). The article was presented at the VIII Simposio Iberoamericano de Terminología, *La terminología, entre la globalización y la localización.* In 2007, "Éléments de terminologie culturelle" was published in *Cahiers du Rifal* (Diki-Kidiri, 2007). *Le vocabulaire scientifique dans les langues africaines: Pour une approche culturelle de la terminologie* edited by Diki-Kidiri (2008a) contains a compilation of research findings and observations dealing with the methodology for cultural terminology.

There are several factors influencing the terminological development of the Sub-Saharan African languages. Most of these factors are of a sociolinguistic nature. Given that societies do not have the same needs and do not live the same situations, terminology has evolved in accordance with the progress of societies. As seen by Diki-Kidiri (1999b, p. 74), to develop a terminology for progress is to develop specialized languages within a given language and from a specific culture. Cultural terminology takes in the diversity of cultures in space as well as in time because knowledge of culture is an essential element of terminology work

within this perspective. Diki-Kidiri has analyzed and defended diversity in observation of reality, and has focused on the study of cultural factors:

> La diversité dans l'observation de la réalité s'explique par la diversité des cultures, laquelle s'explique elle-même par la diversité des parcours historiques des êtres, aussi bien au niveau individuel (biographie des personnes) qu'au niveau des collectivités familiales, locales, régionales, nationales, continentales, voire internationales. (Diki-Kidiri, 1999a, p. 62)

3.5 Textual Approach to Terminology

As it is the case in many other disciplines, evolution in technology and in science has brought considerable changes to the study and practice of terminology. In practice, technology has made easier for terminologists to satisfy society's needs for terminological products, which have developed exponentially since the advent of the World Wide Web. Today, for example, new terminological practices are characterized by the capacity to handle great quantities of textual data on electronic formats (see Condamines, 2005). The differences in terminology processing could be explained, certainly, by the fact that such practices are grounded in diverging theoretical premises. However, they could also be explained by differences in research objectives and compelling practical circumstances. Technology has not only changed the face of terminography practices, it has also made it possible to challenge the theoretical foundations of terminology studies.

In pace with recent developments in corpus linguistics and computational linguistics, terminography practices are now generally carried out through a corpus-based approach (see Aussenac-Gilles & Condamines, 2007). Indeed, electronic corpora that can be read by computers offer terminologists a high quantity of expert material for their terminographical work. Advantages are focused on a reduction of human mechanical work, improved terminology management and the possibility of adjusting terminology applications to specific users' needs. Another advantage of corpora for terminographical work is that it is easier to illustrate how terms are used and to demonstrate how the meaning of terms changes in different contexts. Corpora also provide means to better identify the subject field. In addition, corpora provide links with real-world terminology and make it is easier to illustrate how different contexts allow for term variation.

Without doubt, one of the greatest advantages of working with corpora is that it becomes possible to do linguistic analysis at different levels, i.e., lexical, syntactic and discourse. In this sense, the description of a specialized language and, in particular, its terminology, starts from the study of corpora that contain specialized texts. Indeed, it was the possibility of studying the lexical, syntactic and pragmatic aspects of terms in terminology studies that contributed to the rise of a textual approach to terminology. As with some of the approaches commented on in this chapter, the theoretical framework of the textual approach to terminology is basically a rejection of Wüster's conceptual approach. As L'Homme (2006a, p. 181) clearly puts it, the amount of criticism the general theory of terminology is receiving is due to new proposals that comprise the incorporation of lexical semantics in terminology, work that integrates corpus-based methods and computational approaches. In fact, though corpus linguistics and automatic Natural Language Processing (NLP) are somewhat related and use different methods, scholars interested in corpus and text linguistics have also used NLP in their studies to manage great quantities of textual data in electronic form.

The textual approach to terminology can be defined as a descriptive working method used to explore and describe the textual data collected on a predetermined set of texts in electronic form. "L'approche textuelle est descriptive (on analyse le fonctionnement d'unités lexicales en corpus) et non plus normative : les enjeux de la planification linguistique, si légitimes soient-ils, sont dissociés du travail terminologique proprement dit" (Bourigault & Slodzian, 1998/1999, p. 32). Thus, textual terminology is a methodological approach increasingly used for a descriptive analysis of terms in context.

Already in 1994, Auger and L'Homme (1994/1995, p. 19) noted that terminology description and terminological analysis were based more and more on textual analysis with the help of computational tools, and that the study of the lexicon of specialized language focused on lexical, intra-lexical, and extra-lexical aspects of terms. In this way, terminology description started benefiting from the advantages of terminometric analysis (lexical unit frequency). In this sense, the history of the textual approach to terminological descriptive studies is closely linked to the development of natural language processing technologies.

Condamines (2005, p. 36) noted that textual terminology emerged at the time corpus linguistics and particularly corpus semantics developed. Both corpus linguistics and corpus semantics have made it possible to establish a multidisciplinary link with knowledge engineering in order to process terminological data. The first clear references to the theoretical and practical aspects of textual analysis in terminology were given at the Terminologie et intelligence artificielle Conference - TIA 99. Didier Bourigault and Monique Slodzian contributed with a detailed tutorial on textual terminology (terminologie textuelle). They argued that it was possible to present the evident evolution of terminology by establishing the outlines of what seems to be an alternative to traditional terminology.

In Europe, particularly in France, linguists have concentrated efforts on doing research on NLP, specifically the construction of terminologies starting from a corpus. Condamines (1995) noted that "the new needs in terminology have arisen through advances in artificial intelligence and natural language processing" (p. 220). The roots of textual terminology can, afterwards, be placed in the working group Terminologie et Intelligence Artificielle (TIA). The TIA group, which meets every two years, is composed of researchers in linguistics, artificial intelligence and natural language processing, among others. They have organized workshops, meetings and conferences held since 1995. Theoretical and methodological research is published in proceedings in the context of these academic conferences. Formal content represent a variety of subjects such as semantics and corpora, computational terminology, and application-driven terminology engineering. Among the members of the group, we can mention Nathalie Aussenac-Gilles, Didier Bourigault, Anne Condamines, Monique Slodzian, and Sylvie Szulman.

According to the members of the TIA group, textual terminology proposes to circumscribe terminology within applied linguistics. It has been implied that the main line of research to be developed within the textual approach should be the linguistic analysis of terminology (see Condamines, 1995). "Linguistic knowledge maybe relevant for making hypothesis concerning conceptual systems, or more precisely, that linguistic knowledge may be used to identify terms, links between terms and concepts, and relations between concepts" (Condamines, 1995, p. 220). In fact, "textual terminology focuses on processing discourse, all

categories of linguistic signs must be considered, i.e., not only noun forms, as in most terminological databases, e.g., adjectives, verbs, including those for which the notion of concept seems very abstract" (Condamines, 1995, p. 221). This point of view adopted by the proponents of the textual approach underlines their divergent position with respect to the general theory of terminology.

Advances in terminology extraction over the last years have caused a substantial revision of the "conceptual approach to terminology" as expressed by the Vienna School, mostly in the works of Eugen Wüster. The conceptual approach is viewed by the proponents of textual terminology as directly related to a prescriptive trend in language planning, which in general has neglected the real use of terms in texts. In addition, research conducted on a number of specialized corpora studies has shown by observation that there is diversity in terminologies. For the researchers who adopt the textual approach to terminology (e.g. Bourigault & Slodzian, 1998/1999), "la variabilité remet en cause le principe de l'universalité des terminologies" (p. 30).

The traditional approach to terminology has been called into question by the textual approach to terminology. According to the TIA group, the terminological tradition founded by Wüster in the 1930s made terminology standardization the main goal and the essential application of research in terminology. The TIA group also take exception to the onomasiological approach to terminology; the idea that concepts are at the center of any terminological study. They disagree with the idea that the work of the terminologist should be the reconstitution of some form of conceptual system in every subject field in order to place terms within that system and establish the corresponding terminologies. Instead, proponents of textual terminology argue that rather than thinking about absolute subject field terminologies, it is appropriate to consider various terminological products corresponding to various types of applications. From this standpoint, the TIA group proposes a terminological analysis that aims at producing a description of lexical structures identified in texts. As can be seen, corpus linguistics is at the core of terminological work. Bourigault and Slodzian (1998/1999) state that the main advantage of the textual approach is that

en attribuant au terme la fonction de dénommer les concepts, la terminologie classique privilégie les noms. En s'éloignant de cette approche référentielle très limitative, on est en mesure d'accueillir les autres catégories du discours (verbes, adjectifs, adverbes, prépositions, conjonctions), ainsi que des unités linguistiques plus ouvertes (syntagmes nominaux, verbaux, adjectivaux…). (p. 31)

Textual terminology researchers have pointed to an issue not covered by traditional terminology theory: the importance of text linguistics for terminology extraction. Condamines (2005) argues that Wüster was not in agreement with the idea that terms, as expressed in texts, should be used for the compiling of terminologies. In addition, Wüster did not favor a linguistic approach to terminology because linguistics is more prone to describe and analyze language as it freely evolves. Bourigault and Slodzian (1998/1999, p. 31) argue that terminology has usually been referential (the term labels the concept) and taxonomic (primacy of the generic/specific relation). Textual terminology agrees that concepts do not exist *a priory* of terms and that terminologization is a parallel process to conceptual development. Yet, L'Homme argues that "la terminologie textuelle refuse, comme le fait la socioterminologie, le caractère fixe attribué a priori aux notions terminologiques" (L'Homme, 2005, p. 1115). In fact, textual terminology considers the term as the result of an analysis made by the terminologist in which the researcher takes into account the place of the term in a corpus. The term has to be validated by an expert and by the objectives of the terminological description.

The textual approach to terminology also insists on the fact that we are far from the idealized conception of the subject-field as a well-structured, permanent and clearly limited knowledge. Research findings in corpus linguistics have showed that the meaning of the term is not defined by the concept's position in a conceptual system. This priority of the concept's position in a conceptual system is definitely not the same because

> l'approche textuelle, infiniment mieux adaptée aux besoins et aux problèmes liés à une production effrénée de documents spécialisés, bouleverse les priorités. Alors que la terminologie classique restreint la linguistique aux seuls mécanismes de dénomination et impose une vue essentiellement paradigmatique, l'étude des textes de spécialité déplace l'intérêt sur : -le fonctionnement réel des unités lexicales en contexte; -l'approche descriptive des textes et des unités lexicales au détriment de l'approche normative. (Slodzian, 2000, p. 74)

Consequently, textual terminology moves towards text linguistics considering the text as the point of departure for a terminological analysis. It is a question of building a lexical network by starting from the analysis of real terms in context. That is why Bourigault and Slodzian suggest that "c'est dans le cadre d'une linguistique textuelle que doivent être posées les bases théoriques de la terminologie. … Le texte est le point de départ de la description lexicale à construire. On va du texte vers le terme" (Bourigault & Slodzian, 1998/1999, p. 30). The lexical network is not considered as a single terminology; indeed, the network is primarily associated with a group of specialized subject-field speakers but also with a particular application. From the point of view of text linguistics, the difference between word and term is not as marked as it is for traditional terminology. The objective is to give texts the place they deserve as they represent the real textual practices of a community of specialists, observes Slodzian (2000).

According to Condamines (2005) the possibility of working with corpora makes it possible to account for the real usage of terms. Nevertheless, for this to happen, corpora should obey some important characteristics. Bowker and Pearson (2002) consider that authenticity, format (electronic), size, and specific criteria are four important characteristics to aim for in a corpus. First, for corpora to guarantee that the terms identified had been used in real specialized communicative situations, the texts included in the corpus have to be authentic. Authenticity makes examples real. Second, the texts used should exist in some kind of electronic format. Electronic texts are useful for the computer to process the information with the help of corpus analysis tools; however, computers do not interpret the data which is still the task of the linguist or terminologist. That leads to the third characteristic of acceptable corpora, their size. The size of the corpus depends on the purpose of the study. According to the kind of research the terminologist is undertaking, the researcher will have to determine the size of the corpus for it to be representative. It is then once again the role of the human researcher to select texts according to specific criteria so the sample is representative. The fourth and final characteristic identified by Bowker and Pearson (2002) is the specific criteria for text selection. Terms can be gathered with the help of corpora but due to the quantities of data it is of the upmost importance to use appropriate tools for data analysis. Actually, the creation of tools to assist terminology extraction from texts is one of the most productive aspects of computational

terminology. These tools aim at proposing candidate terms and at finding relationships between them.

The methodology used in textual terminology was suggested by the TIA group (see Bourigault & Slodzian, 1998/1999). This approach presupposes that the essential information for terminology construction (terms and relations between terms) can be found in a corpus of texts produced within the field to be studied. The methodology requires that terminology description starts from specialized texts or corpora. The specialized text (oral or written) is the source of terminology work. It constitutes the source of observation and the description of terms. Textual terminology examines terms in context such as polysemy, synonymy variation, neology, syntax and semantic aspects. It also allows term description in graphic, phonic, morphosyntaxic, morphosemantic, lexical, semantic, discursive and pragmatic forms. "La tâche d'analyse terminologique vise alors avant tout la construction d'une description des structures lexicales à l'œuvre dans un corpus textuel à partir d'une analyse réglée de ce corpus" (Bourigault & Slodzian, 1998/1999, p. 30).

This methodology is used as the basis for terminology work at the Centre de Recherche en Ingénierie Multilingue (CRIM) which was created in 1986. It belongs to the Institut National des Langues et Civilisations Orientales (INALCO). Broadly, the methodology focuses on the following tasks:

- Creation of a corpus
- Exploration of corpora for terminological acquisition
- Exploration of corpora to find relations between terminological units
- Validation of candidate terms and relations between these candidate terms with a subject-field expert
- Exploration of corpora to detect multilingual equivalents in target languages and validation of these proposals by experts

Bourigault and Slodzian note that "devant la masse des données à analyser et les délais imposés, la tâche d'analyse de corpus ne peut être envisagée qu'avec l'utilisation des outils de la terminologie textuelle (concordanciers, extracteurs de candidats termes, extracteurs de relations candidats, classifieurs, etc.)" (Bourigault & Slodzian, 1998-1999, p. 30). Term extraction, for example, is a process whereby a computer program searches through a corpus

and identifies candidate terms. The resulting list must later be verified by a human, state Bowker and Pearson (2002). This participation of the subject-field expert is advocated as well by Slodzian: "La terminologie textuelle part des occurrences manifestées en texte, donc du syntagmatique. La liste de candidats termes résulte d'opérations de filtrage morpho-syntaxiques et sémantiques successives. Elle est soumise au jugement d'experts pour sélection finale des 'termes du domaine'" (Slodzian, 2000, p. 77). At present, computer programs have made the task easier for the experts who make the final selection of terms and the terminological analysis.

The link between information science and computational linguistics, the main tools for terminology processing, has made compilation, storage and retrieval of terminology readily accessible. It is accepted that most, if not all, terminology processing currently applies computer-based methods. Consequently, by using a computer-readable corpus, terminologists can identify candidate terms with the help of "term extraction tools, which are also sometimes known as term recognition or term identification tools" (Bowker & Pearson, 2002, p. 164). Terms, extracted from electronic corpora, may be analyzed in context because the concordancer allows the researcher to look for such a term within the text.

Historically, lexicographic applications, such as the production of dictionaries based in corpus linguistics, were implemented long before textual approach to terminology began. Almost twenty years ago, Sager (1990) already perceived similarities between these two disciplines concerning corpus-based compilation and theoretical groundwork. In Sager's words "terminology compilation now also has a greater communality of principles and methods with lexicography than ever before; but both activities still lack a sound theoretical foundation" (Sager, 1990, p. 30). Today, terminology compilation is becoming increasingly text-oriented and systematically corpus-based as Sager (1990) predicted. Nowadays, terminology scholars "claim that several applications require a better understanding of the functioning of terms in texts" (L'Homme, Heid, & Sager, 2003, p. 154).

With the combination of computer-based methods and corpus linguistics, textual terminology has used the value of new terminological applications to meet specific social needs. Bourigault and Slodzian (1998/1999) refer to thesaurus, indexing for electronic

documentation, terminologies for writing aid systems, terminologies for managing technical data systems, ontologies, lexical networks, reference glossaries and lists of terms for internal and external communication tools, and terminological knowledge bases, among others. Clear examples are terminological data banks (term banks) in large language services belonging to governmental organizations and big enterprises, in standards bodies and in language planning institutions (see Schmitz, 2006). LEXIS (Federal Office of Languages, Germany), TERMIUM (Language service of the Canadian government), EURODICAUTOM (Commission of the European Community) now IATE (InterActive Terminology for Europe), TEAM (Siemens AG, Germany), AFNOR (Association Française de Normalisation), and GDT (Office Québécois de la Langue Française), among others, are examples of computer applications in terminology for terminology storage. They follow, in some way, Wüster's dream of seeing information technology as one of the fields of terminology even in the pre-computer era (see Wüster, 1976a, 1979b, 1979c, 1981).

Currently, corpus linguistics and machine-readable texts are becoming increasingly important for corpus-based terminology extraction. A working method that has already been implemented in Europe and the Americas has adopted an approach characterized by the opposition and criticism to the one suggested by traditional terminology. Among the criticisms of traditional terminology, one can identify the role of the term in the specialized text and the relation between the term and the text. Years ago, Auger and L'Homme (1994/1995), for instance, did not agree with the fact that traditional terminology considers the term as a conceptual unit as opposed to a linguistic unit. They state that "l'unité lexicale de la LSP doit être envisagée comme une composante linguistique fonctionnant dans un système plus grand, c'est-à-dire le texte de spécialité" (Auger & L'Homme, 1994/1995, p. 19). From this perspective, corpus linguistics has contributed to the study of terminology as expressed in corpora or real world texts. The methodological approach introduced here is the corpus-based approach to terminology work that uses corpus-processing tools to help in the task and to favor a systematic approach as François Rastier (2001) and Bowker and Pearson (2002) suggest.

L'Homme (2006b, pp. 61-62) explains that in Canada two research groups place terminology within a "corpus-based paradigm." Both, the conceptual corpus-based approach

followed at the University of Ottawa and the lexico-semantic corpus-based approach established by the Observatoire de linguistique Sens-Texte (OLST) at the Université de Montréal, combine computer applications and terminology and apply corpora and computer tools for research in terminology. Even though textual terminology follows the same corpus-based paradigm, its research concentrates on the linguistic properties of terms. The lexico-semantic corpus-based approach "has deliberately chosen to abandon conceptual analysis and to replace it by lexico-semantic and semasiological approaches very close to those used in lexicography" (L'Homme, 2006b, p. 64). In this regard, L'Homme underlines that "the GTT [general theory of terminology] forms the backbone in most Canadian approaches (except the lexico-semantic approach); other models complement the GTT in order to meet specific needs" (L'Homme, 2006b, p. 66). This fact has already been noted in chapter 2.

Recent advances in computational linguistics and its application to language studies brought changes in terminology practices that allowed mutual enrichment and a questioning of traditional terminology. That traditional terminology does not take into account the text is the salient criticism coming from textual terminology. The increasingly systematic choice of corpora finally makes it possible to see the value of the text as a real communicative event accounting for the linguistic dimension of terms, and the needs of terminology users. Nowadays, professional terminologists can use corpus-based tools to accelerate the terminology analysis process. Concordancers, for example, allow terminologists to collect information from texts about the meaning of terms and how terms are used in specialized contexts. Linguistics can help terminology in this sense because both can use the same mechanisms as the general lexicon to describe terms as lexical units. In textual terminology, the term "description" includes the field expert observations of their own specialized language usage. In that sense, terminologists, in collaboration with field experts, build terminologies.

From the point of view of computational terminology management, Schmitz (2005) observes that the first effort to use computer technology for managing terminological data began in the early 1960s. Since then, modern terminology management systems have changed the working methods of terminologists and have had consequences for the theory of terminology. Even "in the sixties Eugen Wüster (e.g. 1969: 6) saw the computer as a tool for

terminography work when compiling dictionaries, as a translation tool giving translation equivalents, and further as a storage and retrieval tool for the purposes of coordination of terminology work" as pointed out by Nuopponen (1996b, p. 92).

There is no doubt that technology has changed terminography practices in many ways. Although, great progress has been made in establishing semantic relations among terms with the help of computers, it is always the researcher who has to determine the relevance of the computer's work. The contribution of the textual approach to the advancement of terminology science is to be found in the description of the linguistic properties of terms and in the advantages of working with computerized tools. At present, the capability of textual terminology (supported by corpus-based tools) to explain the nature and essence of specialized languages, from a linguistic point of view, has been demonstrated by research findings sponsored by the Centre National de la Recherche Scientifique (CNRS), by research findings at the Centre de Recherche en Ingénierie Multilingue (CRIM) in France, as well as at the Observatoire Linguistique Sens-Texte (OLST) in Canada, among others. However, the scope of this approach to explain some of the deepest philosophical concerns of specialized language, e.g. the nature of specialized concepts, is not a topic of concern.

In summary, it can be seen that all the new theoretical approaches to terminology, with the exception of textual terminology described above, falls into the category of socially-oriented approaches to terminology, which include theoretical issues in sociolinguistics. These approaches see terminology as part of a social environment, associated with diverse linguistic communities and interacting in dynamic ways with members of these communities. Based on this fact, new approaches to terminology have theoretically distinct ways of thinking about addressing, designing and doing terminology research. Presently, many of these terminological approaches make exclusive contributions to solving important terminological problems not even imagined in the past. That is why the five major approaches are based on a common belief that traditional terminology does not meet the latest social terminological needs. The important principle of this belief includes a group perspective where the acceptability of terms is preferred over standardization. This fact is based on a linguistic perception that avers that terminology belongs to general language, that the syntactic function of terminology is

necessary, and that univocity and monosemy are difficult to guarantee. The cognitive perspective rejects the universality of the concept and the fact that special subjects be independent of their domains and languages.

3.6   Conclusion

In short, we recognize that to bring terminology research up to date, we must acknowledge a diversity of approaches to address the latest terminological issues. It is certain that terminology development will value all of the different ways in which terminology research supports the different views of dealing with recent terminology needs. A practical perspective on the different approaches to terminology would be to view them as:

- A means to a desired end and thus a stage for future perspectives
- A tool to affirm the role of terminology research in the development of the discipline
- A way of enriching terminology theory and practice and promoting reflective thinking and better terminological practices

This overview of recent theoretical approaches to terminology, mainly derived from the negative reception of Wüster's work, has shown that there are indeed different trends in terminology research. The way terminology has been analyzed in the newer approaches is diverse. They provide descriptive accounts of terminology, are explanatory of terminology use, provide analytic frameworks as tools for identifying and solving terminological problems, are formative and have a responsiveness to methodological adjustment. In other words, due to a deviation from a prescriptive approach, new descriptive and generative approaches appear to have developed over time. A particularly significant contribution has been to provide more extensive and often illuminating accounts of phenomena in the field. In an attempt to be more practically applicable, the new approaches have sought to construct conceptual frameworks rather than develop complete theories in the scientific tradition. These frameworks provide a set of constructs for contextualizing terminologies within a given communicative community.

Through the above description of approaches to terminology, two concluding key points are to be considered:

1. All socially oriented approaches to terminology find evidence of significant deficiencies in the traditional theory of terminology i.e. the Vienna School of Terminology. Although these new approaches are not homogeneous either in methods or in conclusions, there is considerable discussion within terminological circles concerning the effectiveness of any in particular for a broader context. In fact, most of them focus their research analysis and terminological recommendations in particular sociolinguistic contexts. In this sense, they seem to be limited in scope. For example, the sociocognitive approach, though initially restricted to the analysis of one single discipline, i.e. life sciences, has also expanded through research in the social domain and intercultural communication. Additionally, most of the work of cultural terminology is developed in Africa for language planning purposes, as is mainly the case of the communicative approach to terminology that has its roots in Spain. For socioterminology and the textual approach rooted in France, their aims and their methods of research differ. However, they still focus on specific aspects of language as the sociological aspect of terminologies, e.g. the way terminologies are created and circulated in human societies, or the way they are perceived by speakers. The textual terminology approach has found many applications with the combination of sociolinguistics and Natural Language Processing (NLP) to deal with terminological phenomena. Nowadays, the approach has made progress in terminology variation. As it is clearly seen, most of the approaches reviewed are targeted, that is to say, they deal with specific sociolinguistic contexts, and with research focused on social sectors emphasizing efficiency in particular linguistic communities.

2. These new proposals are a most welcome work to the growing corpus of literature by and about the reception of Wüster's work available in the English, French and Spanish-speaking countries. The difference between terminology theory and terminology applications falls into the category of theoretical approaches (points of view) and methodological approaches (ways of working) respectively. Terminologists may approach their work from different angles: term-oriented, concept-oriented and user-

179

oriented. One of the main reasons for the dramatic change in direction in terminology is the reaction to the array of new challenges confronting the field. The rapid pace of technological developments in the last few years has created many new opportunities for approaching terminology research.

All the new approaches to terminology presented in this chapter can claim to have escaped the limitations of the traditional approach to terminology. However, none of them may claim to have gone beyond a comprehensive perspective. In brief, while we think the theoretical debate in terminology is very fruitful, it seems that terminology is fundamentally realigning itself with linguistics.

Chapter 4

Mapping the Reception of Wüster's Work in Academic Journals

In recent years, a number of terminology researchers have directed unsympathetic criticisms toward modern terminology; specifically, towards Eugen Wüster's pioneering ideas. As was noted in chapter 2, the rise of sociolinguistic influence lead to social approaches to terminology emerging as a major alternative to Wüster's ideas by virtue of their descriptive components. Despite the apparent validity of these arguments, however, relatively few studies have provided empirical and descriptive insights into how the reception of Wüster's work developed both geographically and chronologically.

In an attempt to shed some light on the above-mentioned issues, this chapter details findings of an empirical-descriptive study carried out to determine the reception of Wüster's work in scholarly journals. With this in mind, we examine a corpus of academic journal articles and describe the dynamics of the reception of Wüster's work. We also lay the groundwork for developing a basis for interpreting such reception and its relation to the development of terminology which will be demonstrated in chapter 5. Therefore, the overall effect of this chapter is to find a bridge between the reception of Wüster's work and the practical, context-dependent realities facing terminology practices for the development of the discipline. We will consider the extent to which both the positive and negative reception of Wüster's work may have influenced the development of terminology as a discipline.

Following the structure of our study, this chapter has three major parts. After this short introduction, the first part describes the sample study in detail. The second part presents a quantitative descriptive analysis of findings. The third part is concerned with the discussion on how Wüster's work has been quoted, cited and mentioned. Finally, the chapter concludes with the major inferences that can be drawn from the results. This chapter answers the question raised by the original research problem and paves the ground for the next and final chapter, which is concerned with the discussion and interpretation of findings by showing the

significance of the results and their impact for the development of terminology. The interpretation will be carried out following the theoretical framework, i.e. reception theory and "the methodology of scientific research programmes."

4.1   Description of the Study

By mapping the reception of Eugen Wüster's work in academic journals we explore the intellectual space and the issues that reflect the large diversity of commentaries in response to Wüster's work. Taking into account the development in the field of terminology, this study looks for possible explanations of the link between the positive and the negative reception of Wüster's work and the growth of terminology as a scientific research programme. Using explicitly Lakatosian terms, it seeks to appraise research programmes in terms of their capability to effectively predict novel facts, as already explained in the introduction of this dissertation.

We consider this study both descriptive and empirical for several reasons:

1.   In attempting to map the reception of Wüster's work in academic journals, the study explores, by means of direct observation, a corpus of articles from which to collect and describe data.

2.   The study primarily gathers data regarding the reception of Wüster's work and focuses on identifying patterns in its reception. The goal is to describe the reception.

3.   By means of direct observation of the corpus of articles, the results will focus on answering the question: How has the reception of Wüster's work influenced the current state of development of terminology?

4.   As a descriptive study, it also gathers opinions about the present state of this reception in relation to the development of terminology. The study does not provide any solution or propose any improvements of the situation (negative and positive reception) but a Lakatosian interpretation.

5.   By means of an empirical look at the reception and its characteristics, this study facilitates the understanding of future research and the appraisal of terminology on a more comprehensive scale.

6.   It finally helps in generating hypotheses on which further research may be based.

In concrete terms, with this study we examine the reception of Wüster's work. We restrict the study geographically to Europe and the Americas, because Europe and the Americas are important and revealing places for the evolution and development of the discipline. Scholarly articles related to linguistic issues and published in English, French or Spanish have generated significant terminological activity carried out in Europe and the Americas in general. In addition, these are the languages that we are familiar with. At this point it is important to mention that there is also a large volume of terminological research that follows Wüster's approach, at least partially in German and Scandinavian languages as is the case of Nordterm. The study also covers a period long enough to reveal the reception, i.e., from 1979 (the year of the publication of Wüster's general theory of terminology) to 2009. We do not pretend to provide an exhaustive review of all the literature written in the field of terminology, but to be inclusive in the selection of articles from academic journals. The selection of articles to review is restricted to those works that explicitly quote, cite or mention, in one way or another, any of Wüster's publications in the text or in the reference list as works cited. At the same time, we concentrate on works that provide important leads as to where discussion over the reception of Wüster's work is going. Such works help us identify the authors leading such discussions. Table 6 summarizes the description of corpus design.

Table 6. Description of Corpus Design

Subject delimitation	Terminology and related fields (linguistics, scientific and technical translation)
Time period	From 1979 to 2009.
Language delimitation	Articles written in English, French or Spanish
Geographic delimitation	Europe and America (North and South)
Source of data	Academic scholarly journals in terminology and related fields. (see Table 8).
Document type	Records considered as journal articles retrieved from the libraries of the Université de Montréal databases
Bibliographic databases	Université de Montréal – Atrium library catalogue • A&HCI – Arts & Humanities Citation Index • MLA – Modern Language Association International Bibliography • LLBA – Linguistics and Language Behavior Abstracts • SSCI – Social Sciences Citation Index • Ulrich's Periodicals Directory (source of bibliographic and publisher information on periodicals of all types)
Key words	English, French and Spanish: • Eugen Wüster • General theory of terminology

4.1.1 Background of the Study

Terminology research has increased considerable during the last 30 years. Much of the existing literature on terminology from the last two decades is concerned with the advances in terminology research and the theoretical debate about the descriptive nature of terminology which tend to promote specific approaches as possible solutions to the gaps found in Wüster's work. More specifically, there has been a substantial increase in articles dealing with these issues from both positive and negative standpoints. Many of these new contributions assert that terminology is a purely social phenomenon. The emphasis is firmly upon the renovation of prescriptive approaches into a more descriptive form of terminology research.

Strategic efforts are being made by some terminology scholars (e.g. Budin, 2001; Candel, 2004; Humbley, 2004, 2007) to analyze divergent positions towards the interpretations

of Wüster's ideas, and to clarify some theoretical aspects of his work. These efforts have contributed knowledge to the history terminology, and to the dissemination of Wüster's work for the benefit of the discipline. Therefore, the issue that motivates the present study is an apparent large increase, during the past 30 years, in the inconsistencies of the reception of Wüster's work (chapter 2). To date, little proper record of the magnitude of the reception of Wüster's work or of its characteristics exists. Our hypothesis indicates that both the negative and positive reception of Wüster's work have influenced the emergence of new terminology research approaches as illustrated in chapter 2 and chapter 3. Research on the reception of Wüster's work in Europe and the Americas remains little studied, in spite of the effort already provided by Humbley (2004, 2007). Tackling the question of the reception of Wüster's work constitutes a more difficult quest because criticisms, however widely diffused in varied forms, were sometimes made with great discretion in Europe and the Americas.

4.1.2 Study Aims and Objectives

This descriptive-empirical study is focussed on mapping the reception of Eugen Wüster's work in academic journals. As an empirical study, it attempts to describe and elucidate positive and negative reactions to Wüster's work in articles from academic journals, and to establish general principles surrounding the reception of his work. For this purpose, we selected a corpus of articles based on references made to any of Wüster's publications. The overall purpose of the study is to provide insights into how Wüster's contribution to terminology has been identified, received and interpreted, and how such reception contributes in general to the development of terminology. In light of this, the study proposes to fulfill two broad goals, summarized as follows:

- To map the reception of Wüster's work in academic journals

- To analyze such reception in order to find a link to the development of terminology as a scientific research discipline

The ultimate aim is to examine the treatment of Wüster's ideas to explain how his work has been read, appraised, and reported, and from what point of view scholars have approached his work. To this end, we identify the areas or points of views from which authors have dealt

with the reception of Wüster's ideas. We also infer that this description mostly identifies the prevailing attitudes surrounding Wüster's general theory of terminology since the academic scope and intellectual impact of the Austrian engineer, in Europe and the Americas cannot be appraised without reference to his theory.

The results of the study will provide the basis for an interpretation of the reception of Wüster's work and will reveal the extent to which a study like this contributes to the growth of terminology as a discipline. For example, it enables the discipline to gain a holistic view of Wüster's contribution in providing a sound base in a corpus of articles. Another advantage is that the study can be useful in capturing the emergent and immanent evolution of the discipline. This study may also allow for generalizations by which the methodology and findings can lead to some form of replication.

4.1.3 Expected Outcomes of the Study

The positive and negative reception identified in this study should be seen as an inspiration to better know the life and work of the father of modern terminology. This study will:

- Yield a better understanding of the reception of Wüster's work in academic journals

- Enhance and advance academic research on the debate on the validity of Wüster's contributions and outline potential explanations

- Help stimulate and develop reception studies in different corpora such as books and proceedings

- Assess the importance of the reception of Wüster's work and its implications for the development of terminology

- Elucidate the specific problem under study by collecting data and information about the various elements contributing to the reception of Wüster's work, namely, his general theory of terminology

4.1.4 Study Design and Methodology

The overall approach used to gather and analyze data for this chapter is sketched out in this section. The process of research is exploratory as it provides insights into the reception of Wüster's work, and inductive because it moves from specific observations to broader generalizations. This study did not start with a hypothesis to test. Instead, it started with a research question that guided us into the three key moments in the organization of the research. These moments worked as stages in the process and are briefly explained in turn. First, we selected a corpus of academic articles from which we collected data, then with the help of a Microsoft Access database tool. Next, we stored the data, a technique used in conjunction with content analysis that helped us identify common categories. Finally, we analyzed data and prepared the description and analysis of findings that will be shown in sections 4.3 and 4.4.

4.1.4.1 Selection of Corpus

This descriptive study documents the presence of Eugen Wüster's work in journal articles in order to describe the reception of his work. We took into consideration the literature in terminology and related fields such as the ones proposed by Wüster (1974b), in "Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften": terminology, linguistics, ontology, information science. At the beginning, we examined the existing literature in terminology, we considered three distinct types of documents: books, congress proceedings and journal articles, each one a good candidate for our research. However, we decided to build the corpus with the articles drawn from specialized journals because they contain major up-to-date studies in the discipline, they can be easily retrieved from the dates we needed, and they capture significant criticism.

Since our main objective is to describe and analyze the reception of Wüster's work from 1979 to 2009, in Europe and the Americas and in English, French or Spanish, the data for the current study was obtained from 39 journals. Table 7 lists the titles of the 39 journals, the number of articles analyzed in each journal, and the dates of current circulation. Articles were retrieved from the library databases of the Université de Montréal. Four bibliographic

databases were allotted for article retrieval. Databases included the Arts & Humanities Citation Index (A&HCI), the Modern Language Association International Bibliography (MLA), the Linguistics and Language Behavior Abstracts (LLBA) retrieved from Cambridge Scientific Abstracts (CSA-Allumina Platform), and the Social Sciences Citation Index (SSCI). We also consulted Google Scholar to locate full texts of scholarly literature through libraries or on the web and the Ulrich's Periodicals Directory as a source of bibliographic and publisher information on academic periodicals.

At baseline, each retrieved article had to undergo an evaluation in terms of criteria. They were examined, analyzed and evaluated taking into account published material on terminology that provide reactions to Wüster's work. We limited ourselves to articles mentioning Wüster, any of his contributions to terminology, any of his publications, that is to say, his major work. A first inspection determined whether the publication contained reception of Wüster's work. Our criteria for inclusion as significant were rather restrictive. We selected only those articles, which make at least one explicit comment criticizing, positively or negatively, any aspect of Wüster's ideas. The appropriate criteria ensured that articles: a) were published in an academic journal; b) fell within the limitations of the study; c) addressed the topic of research; and d) were able to respond to the research question. In the end, more than 200 references were retrieved and 166 bibliographic references were selected and further recorded using a Microsoft Access database.

Table 7. List of Journals

	Journal	Number of Articles	Date
1.	*ACTA* (Autores Científicos-Técnicos y Académicos)	3	1994 to-date
2.	*Banque des Mots-La* (Revue de terminologie française)	10	1971-1980
3.	*Cahiers du CIEL-Les)*	2	1992 to-date
4.	*Cahiers de Grammaire*	1	1979-2006
5.	*Cahiers de la Documentation*	1	1947 to-date
6.	*Cahiers de Linguistique Sociale*	2	1979 to-date
7.	*Cahiers du Rifal* (former *Terminologies Nouvelles*)	3	2001 to-date
8.	*Communication and Cognition*	1	1968 to-date
9.	*Debate Terminológico*	2	2003 to-date
10.	*DELTA* (Documentação de Estudos em Lingüística Teórica e Aplicada)	1	1985 to-date
11.	*Dictionaries* (Dictionary Society of North America)	1	1979 to-date
12.	*Fachsprache*	4	1979 to-date
13.	*Hermes* (Centre National de la Recherche Scientifique CNRS)	3	1984 to-date
14.	*Ikala*	1	1996 to-date
15.	*International Classification* (former *Knowledge Organization*)	3	1974-1992 1993 to date
16.	*International Journal of Lexicography*	1	1988 to-date
17.	*International Journal of the Sociology of Language*	4	1974 to-date
18.	*Journal of Biomedical Informatics*	1	1969 to-date
19.	*Journal of Information Science*	2	1979 to-date
20.	*Langage et Société*	1	1977 to-date
21.	*Langages*	9	1966 to-date
22.	*Langage et l'Homme-Le*	5	1966 to-date
23.	*Language Problems & Language Planning* (Former titles (until 1980): Lingvaj Problemoj Kaj Lingvo-Planado (United States) (0165-2672); (until 1977): Mondo Lingvo Problemo (Netherlands) (0026-9344))	2	1969 to-date
24.	*Language Today*	1	1997 to-date
25.	*Lenguaje*	1	1972 to-date
26.	*Letras de Hoje*	1	1967 to-date
27.	*LSP & Professional Communication* *LSP, Professional Communication, Knowledge Management and Cognition* (Started as the *UNESCO Alsed-LSP Newsletter*)	8	1977-1985 2001-2008 2009 to-date
28.	*Meta*	30	1956 to-date
29.	*Panace@*	5	2000 to-date
30.	*QUARK*	1	1995 to-date
31.	*Revue Française de Linguistique Appliquée*	5	1996 to-date
32.	*Sémiotiques*	1	1991 to-date
33.	*Sendebar*	3	1990 to-date
34.	*Terminologie et Traduction*	5	1964-2003
35.	*Terminologies Nouvelles* (later *Cahiers du Rifal*)	9	1989-2000
36.	*Terminology*	16	1994 to-date
37.	*Terminology Standardization and Harmonization*	1	1989 to-date
38.	*Terminology Science and Research*	17	1990 to-date
39.	*TradTerm*	1	1994 to-date

As seen in Table 7, 39 academic journals were selectively retained because they contained articles that met the criteria for inclusion in our corpus. For retrieving English and French articles, we particularly used the Université de Montréal databases, as already mentioned. For Spanish articles, we had to use a different strategy because most of the articles did not appear in the databases examined. For this reason, we took into account Google Scholar and Google Scholar Citations. Google Scholar, the web search engine, enabled us to search for more Spanish bibliography. It included scholarly articles available across the web, full texts and citations. Google Scholar Citations gave us a list of the books and articles that cited the article we originally retrieved. Since the list only included documents available in Google Scholar, we verified and completed the list by using the Arts & Humanities Citation Index® from the Web of Science which covered articles as well as conference proceedings and provided access to the arts and humanities bibliography back to 1975.

At this point, it is appropriate to specify that the criteria used to select the articles in the corpus set the limits for the journals studied and restricted the list of journals examined. This is the reason why the journal *Terminogramme*, published by the Office de la langue française, is not listed in the corpus of journals. This journal is not indexed in the databases accessed. Some articles from volumes 59 through 62 (1999) are the only issues indexed in the MLA International Bibliography database but the articles do not meet the criteria for inclusion in our corpus. However, the journal *Terminogramme*, special issue 101-102, *Interventions sociolinguistiques et pratiques langagières: L'Office de la langue française de 1961 à 2001*, edited by Monique C. Cormier and Noëlle Guilloton (2001) was of special interest for our study since it provides an overview of the work and the activities carried out by the Office de la langue française during forty years of existence (1961-2001). Two articles, Cabré (2001a) and Gambier (2001), were analyzed and cited in chapters 1 and 3 respectively. In this way, though the journal is not listed in our corpus, we analyzed and took into account part of its content for chapters 1 and 3.

After the selection of articles, the study was conducted from a corpus of 166 articles (Table 8) published in academic journals during the period from 1979 to 2009 in the field of terminology and related fields (see Appendix C). This corpus represents rich information for

purposeful sampling. The articles were selected based on their content, e.g. explicit mention of Wüster or any of his publications; literally those which quote any of his writings in the text or clearly cite any of his publications in the reference list or bibliography. The data found contributed information and description to the investigation. To extract data from the articles, we used key words as referential units because they are useful when making inferences about any point of view, assessment, or preference of works. Referential units refer to the way a unit is represented. For example, an article might refer to the general theory of terminology as just "the GTT", "traditional terminology", "classical theory of terminology", or "Wüster's theory", each denoting the same object. These units were used for data collection and data analysis.

Table 8. Summary of Corpus

Number of Journals	Number of Articles	Number of Articles by Language	Years
39	166	English 76 French 69 Spanish 21	1979 to 2009

4.1.4.2 Microsoft Access Database

By using Microsoft Access, we created a database as the instrument for gathering, organizing and presenting data regarding the reception of Wüster's work in order to extract reports and analyze them. Microsoft Access also allowed us to display data in a variety of formats, e.g. forms, reports, graphs, and tables. It also allowed us to export data into Microsoft Excel, which helped us to present quantitative records. The database was created based on a previous general reading card that we called a content analysis grid (Figure 9), previously designed to store the bibliography and the general information content of the articles.

Figure 9. Content Analysis Grid

Bibliographic information	
Complete reference (APA style 5th edition)	
Type of document	**Place of the study**
Journal article ____ Book ____ Research report ____ On-line document ____ Other ____	Europe ____ (specify) _____ Americas ____ (specify) _____
Language of the document	**Language studied / of terminology work**
English ____ French ____ Spanish ____	English ____ French ____ Spanish ____
Type of study	**Relevance for the project**
Theoretical ____ Practical ____	High ____ Low ____ Moderate ____
Characteristic of the document concerning the reception of Wüster's work	**Type of reception**
Prising ____ Criticizing ____ Analyzing ____	Positive ____ Negative ____
Wüster's work	**Citations of Wüster's work in the text**
Wüster's 1979 work? Yes ____ No ____ Other Wüster's work? Yes ____ No ____	Yes/No ____ Page ____ Primary source ____ Secondary source ____
Other relevant information	**Notes & comments**

At the beginning, the grid worked as a reading card for the articles being analyzed. The grid was the most appropriate way in which we could classify information for further analysis such as the bibliographic information of the article and comments of verbatim citations on Wüster's reception. The purpose of the content analysis grid was to provide a complete package of data in a single block and study the relevance of the articles retrieved from the database. The grid was then refined and adapted into an Access database. The structure of the database included one major form, named analysis, linked to seven other forms as Figure 10 illustrates.

Figure 10. Database Content and Structure
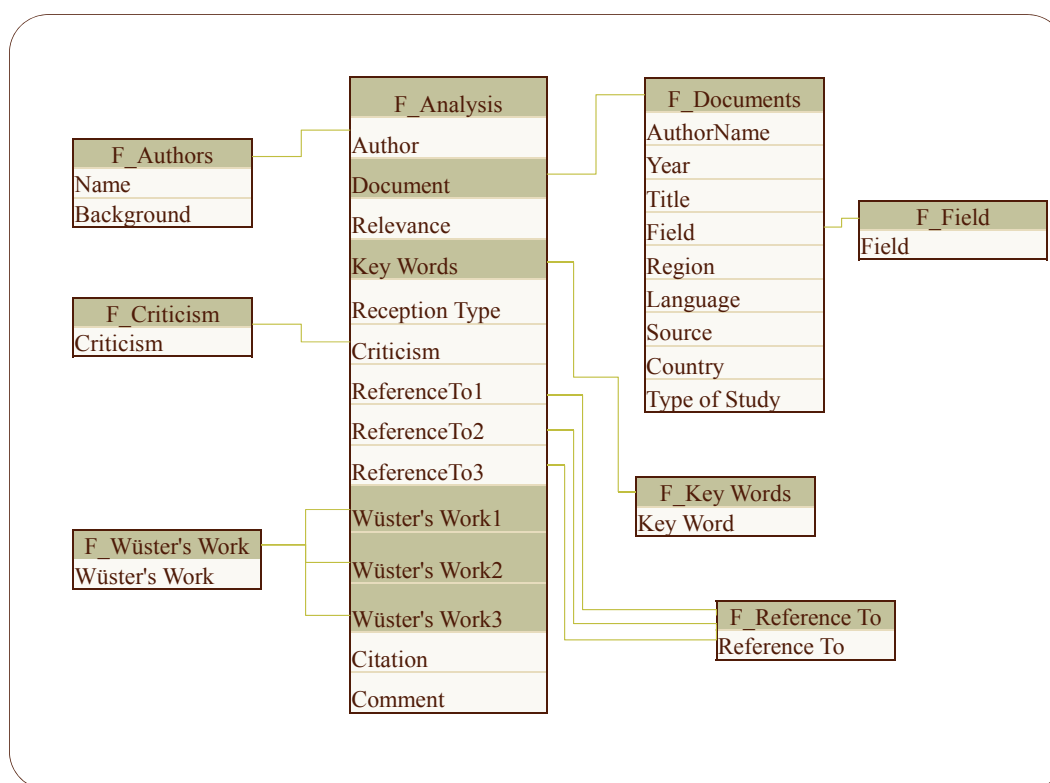
As the main objective of the database was to document the reception of Wüster's work in academic journal articles, the database includes forms aimed at registering information regarding the author of the article, the article itself, and the analysis. These criteria helped categorise the articles. For example, from the Analysis Form, we have access to all the information from the other seven forms, i.e., the author's name and background, the topic of criticism, Wüster's work cited and/or mentioned, the article's bibliographic information which included the region and country where the authors work, the field of study, and some key words that helped guide the examination. An example of the data can be seen in the main Analysis Data Form presented in Figure 11.

Figure 11. Analysis Data Form

4.1.4.3 Qualitative Data Analysis

At this stage, we started the process of examining, organizing, and interpreting data with the goal of highlighting useful information, preparing research reports, and answering research questions. For this purpose, we extracted reports from the database and started to make descriptive statistics aiming at summarizing results. The analysis of results consists of three main parts. The first part, descriptive analysis of findings (section 4.2), provides the results as a general overview. The descriptive analysis looks at the extent to which language, region, country, topics of criticism and reference citation specifies the reception. The second and third parts concentrate on the positive and negative reception of Wüster's work respectively (sections 4.3 and 4.4). The fourth examines the response to Wüster's work in function of the number of times his work was quoted, cited or mentioned over time (section 4.5). Such parts feature the main themes of reception and emphasize regularities, patterns and

194

topics. This analysis addresses the possible causes and consequences of the reception, which lay the groundwork for an expansion of terminology as a discipline.

4.2   A Long Road to Recognition

In this concise descriptive analysis of findings, we would like to take readers on an exploration of the basic reactions that underlie Wüster's controversial work. While reading the results, we identified positive and negative reactions towards his ideas. We developed highlights that carefully managed interaction between Wüster's writings and reader's reactions. In order to explain the interaction, we rely on four major criteria that better describe the characteristics of the reception. The first criterion inquired about place; the second about language; the third about the main topics of criticism; the last dealt with Wüster's work quoted, cited and mentioned. Initially, a descriptive analysis is presented drawing attention to the four points of interest: place, language, topics of criticism, and works cited. The interpretive account of the reception will be found in chapter 5, section 5.2 as we obtain answers to these questions:

- How was the reception of Wüster's work between 1979 and 2009?

- How was Wüster's work received in Europe and the Americas?

- How was the reception of Wüster's work in English, French and Spanish?

- What are the main topics of criticism of Wüster's work?

- To what extent is Wüster's work quoted, cited and mentioned?

From the following chronological analysis, our results provide an interesting appeal to terminologists and enthusiastic linguists. Broadly speaking, reception, in the sense used in this doctoral dissertation, relates to responses and reactions to Wüster's work. It can be described as the way readers build, complement and organize understanding on Wüster's ideas. However, much can happen in thirty years. The importance of Wüster's work may decrease or expand in the hearts that hold the legacy. That is why we considered it was the right time to re-examine the impact of Wüster in modern terminology. With a corpus of 166 scholarly journal articles, we provide the primary material for new interpretations.

In this dissertation, positive reception means showing agreement with or approval of Wüster's ideas that emphasize how important or useful they are. Negative reception corresponds to comments expressing disagreement with, opposition to, or criticism of Wüster's ideas. Examples are displayed in sections 4.3 and 44. We show the salience of Wüster's presence in the age of international communication, describing some of the leading reactions in which Wüster's authority was claimed both for and against the development of terminology as a discipline.

Consistent with the discussion in chapter 2 of the overview of the reception of Wüster's work, the results of this sample study also reveal that Wüster's work has mostly been positively received. We know the study is too limited for broad generalizations. However, as shown in Figure 12, 104 articles out of 166 showed a positive reception, which makes up 63 percent of the total reception. The negative reception can be seen in 62 articles making up 37 percent of the total reception.

Figure 12. Positive and Negative Reception of Wüster's Work
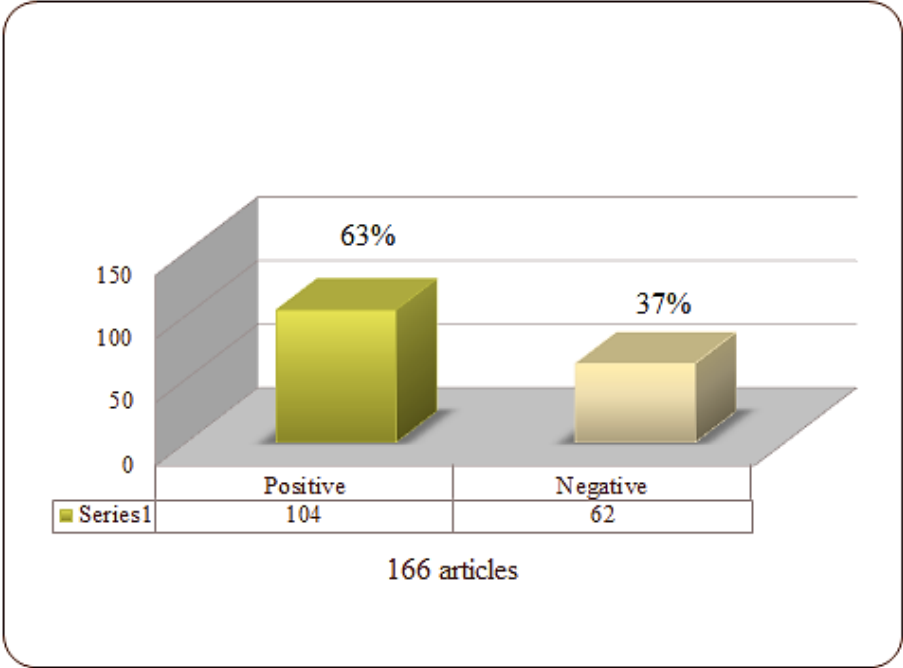
From the results of our study, we can also trace a historical analysis of the reception of Wüster's work during the period from 1979 to 2009 and we can highlight some milestones in

the development of terminology (Figure 13). The outcomes of the study expose clear relations to the information given in chapter 2 concerning the positive and negative reception to Wüster's ideas. Based on these results, the first period (1979 to 1989) saw a total acceptance of Wüster's work, which coincides with the recognition and initial applications of the general theory of terminology in the first years after Wüster's death as his ideas pioneered research in terminology around the world.

Figure 13. Chronology of the Reception of Wüster's Work
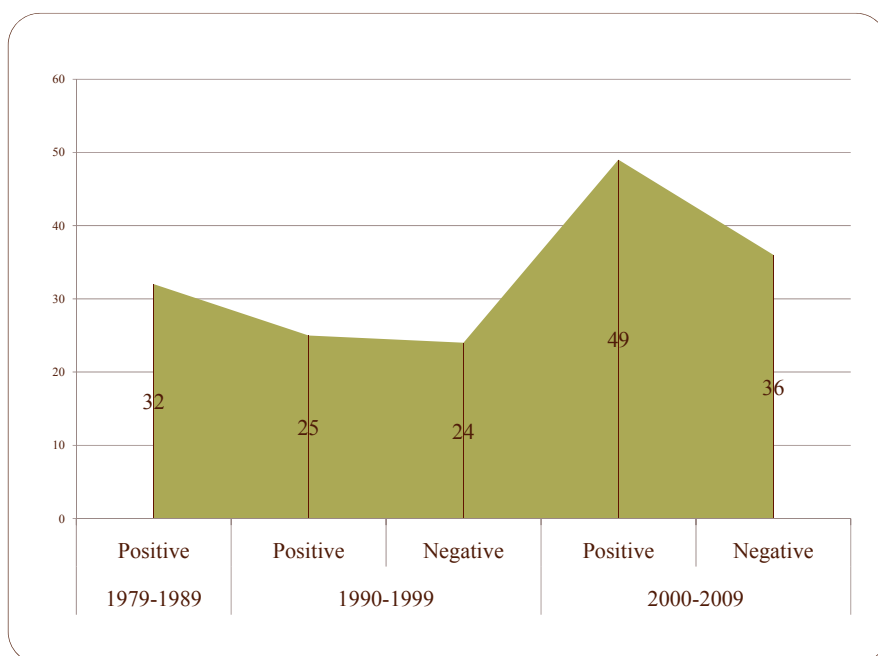
It was not until the period between 1990 and 1999 that both a positive and a negative reception began to be noticed. In fact, 25 articles show positive reception and 24 negative reception (Figure 13). The main reasons for this variation were the technological developments in terminology work introduced by the textual approach to terminology and the social approach to terminology introduced by socioterminology and sociocognitive terminology as detailed in chapter 3. With new theoretical approaches to terminology during the 1990s, Wüster's contribution to the discipline became the subject of negative treatment. The last period (2000 to 2009) was the most productive in terms of number of articles. It also shared a mix of positions concerning Wüster's work. Though this period saw a more positive reception with 49 articles

showing a positive reception (see Figure 13), the negative reception brought a new wave of important contrary reactions to his work as already reported in chapter 2.

Figure 14 displays a more detailed report on the countries where Wüster's work was received. It demonstrates that France is the country where most articles have taken issue with Wüster's ideas with a percentage ratio of 29 percent as compared to the rest of the countries reported in this study.

Figure 14. Reception of Wüster's Work by Country
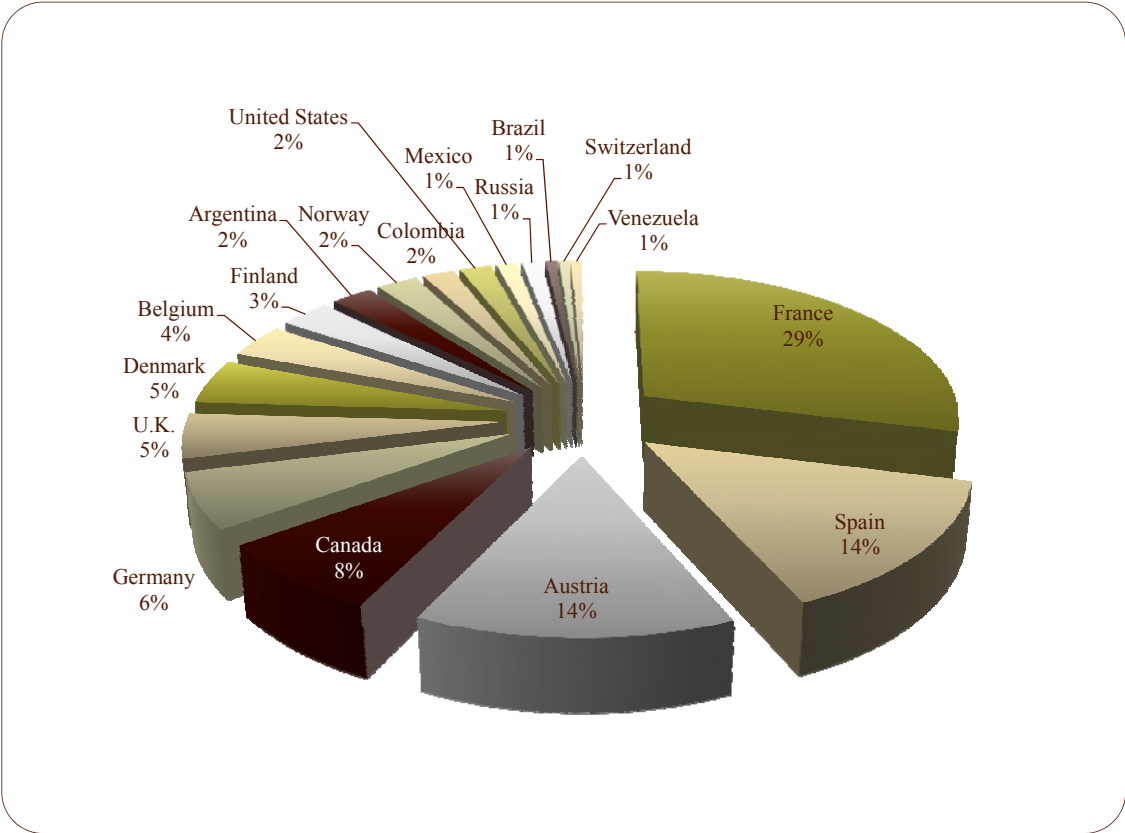
For the data collection, a content analysis was adopted in order to examine the articles and classify their information. Initially, the analysis of the articles revealed 33 general topics of criticism to Wüster's work:

1. Controversy around Wüster
2. Interdisciplinary field of study
3. Philosophy
4. GTT-General Theory of Terminology
5. Restricted objectives of analysis
6. Univocity
7. Applied linguistics
8. Principles of terminology
9. History of terminology
10. Synchronic aspect of terminology
11. Standardization
12. Machine Tool conceptual structure
13. Infoterm
14. Onomasiological approach
15. Concept relationships
16. Philosophical foundations of GTT
17. Confusion Signifié/Concept
18. Linguistic awareness
19. Foundations of terminology
20. Semiotic approach
21. Knowledge representation model
22. Terminology variation
23. Prescriptive Terminology
24. Terms from texts
25. Hyperonymy-Hyponymy
26. Planned language
27. Concept-based approach
28. Difference General L/Specialized L
29. Terminology autonomous discipline
30. Difference LSP lexicography-Terminography
31. Term, the concept of
32. Concept, the concept of
33. Collocations

By reducing the above 33 topics of criticism to broader categories, we could identify 14 main themes which covered the most criticized topics in the corpus of 166 journal articles. In Figure 15, the numbers on top of the columns indicate the number of articles in which the topic is discussed. The general theory of terminology seems to be the most criticized topic.

Figure 15. Topics of Criticism to Wüster's Work
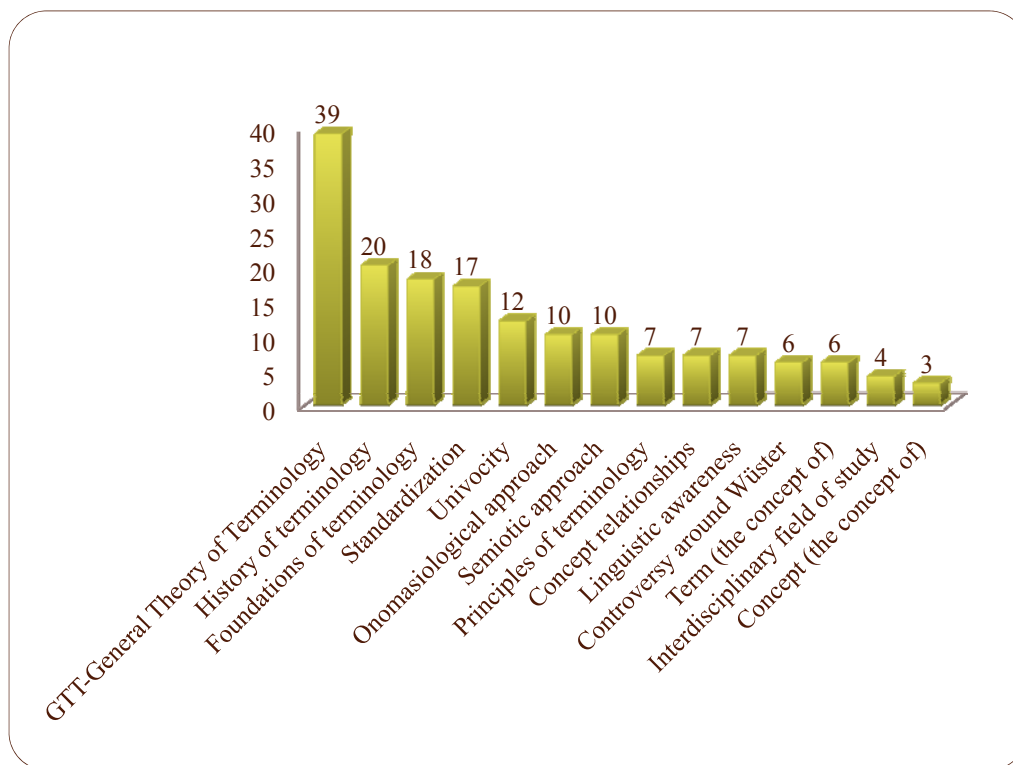
Some of these topics of criticism will be explained in more detail in sections 4.3.3 and 4.4.3 and from the point of view of the positive and negative reception respectively. It is important to say that besides these complex topics there are other assumptions that Wüster developed in his theory. Wüster filled in many details around the topics displayed in Figure 15. He also believed that these topics were essential for understanding how a unified terminology would help better international communication. For instance, the study of language planning and international communication is at the core of Wüsterian terminology, so much so that it is often interpreted as non-natural terminology. What Wüster proposed is similar to what goes on in other sciences. Researchers in their fields often study phenomena in their environments, hoping to produce findings that will apply under other conditions.

Yet, if the reception of Wüster's work is to be valued, one may examine Wüster's works overall citation (reference list) rate as a terminologist. By reviewing the bibliography in the articles of our corpus, we determine that Wüster's publications are known or at least have been read and that his ideas are within the expected range of acceptance or rejection in the field of terminology. In this regard, reception theory assumes that the history of a work can be understood from its active reception and from the permanent change of the reader's horizons of expectation as will be explained in chapter 5, section 5.1.1. In this way, Wüster's contribution to terminology and his acceptance can be determined by the number of citations of journal articles as a way of getting an appraisal of his reception. This is especially true considering that Wüster's work is cited in 97 articles out of the 166 articles in our corpus, which accounts for 58 percent of recognition either positive or negative. This means that 69 articles (42 percent) did not cite any of Wüster's writings (see Figure 16). A more detailed account on Wüster's work mentioned, quoted and cited will be given in section 4.5.

Figure 16. Number of Articles that Cite Wüster's Work

	Wüster's work cited	Wüster's work not cited
■ Series1	97	69
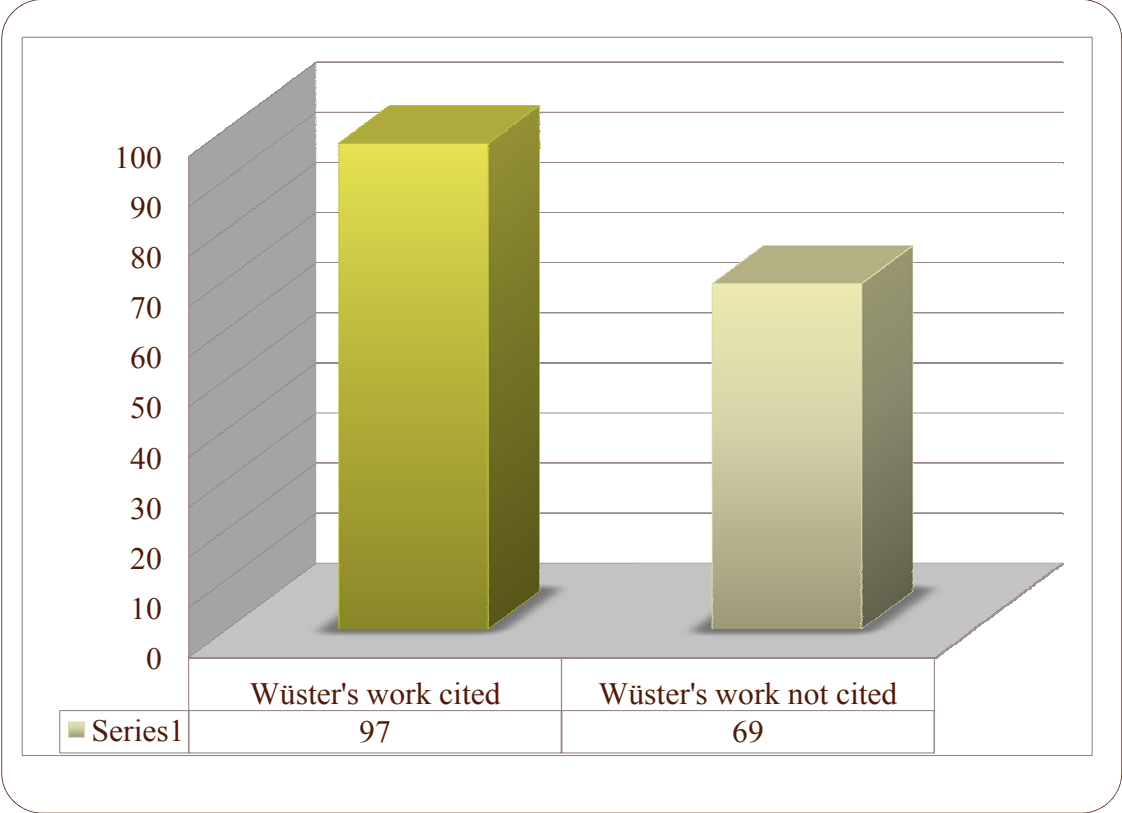
In this section, meant for mapping the reception of Wüster's work, we include a panoramic picture of the results of the study derived from the positive and negative reception. The following sections (4.3 and 4.4) concentrate on describing the positive and the negative reception of Wüster's work respectively. In each section, we describe the results in Europe and the Americas, by language, and by topics of criticism. Section 4.5 concentrates on studying Wüster's work quoted, cited and mentioned. At this point it is appropriate to say that these findings will be interpreted in chapter 5 in the light of reception theory and "the methodology of scientific research programmes."

4.3   Charting the Positive Reception of Wüster's Work

The positive reception of Wüster's work is due to the merits that authors found in his work, and to the fact that his theory solved terminological problems in his time. Figure 17 shows that the affirmative reception represents the 63 percent of the total reception. This positive reception of Wüster is equivalent to the recognition of his contribution to terminology in Europe and abroad. According to the results of our study, Wüster's work first began to gain followers in Europe, in particular in Austria and Germany where most of his research took place. Inspired by the positive reception of some of Wüster's terminological philosophy, his followers decided to disseminate his ideas around the world by means of his general theory of terminology. However, in spite of the positive reception of his work, there was the possibility that its applications did not fulfill the expectations of some terminology researchers (see section 4.4). In what follows, we will show the positive reception based on countries of reception, languages, and topics of criticism.

Figure 17. Positive Reception of Wüster's Work by Language
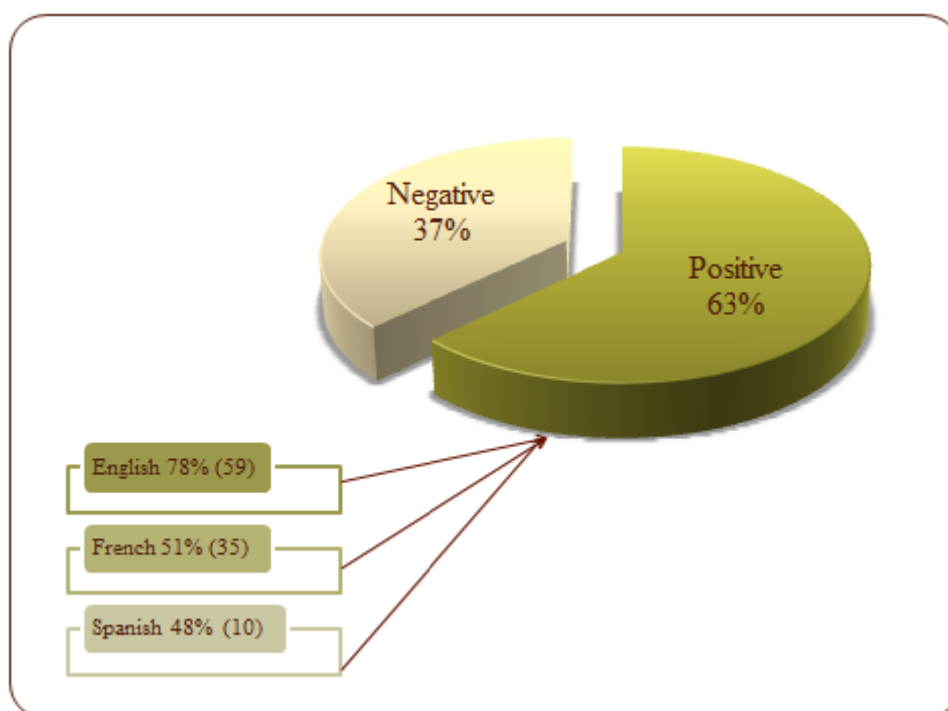
4.3.1 From an Engineer to a Terminologist in Europe and the Americas

When Eugen Wüster wrote his doctoral dissertation on electrical engineering back in the early 1930s, there was little indication that he would one day be acknowledged as a terminologist with a terminology theory to his name. It may have not surprised many; terminology was just one of his strongest interests. An electrical engineer by training, he seemed to enjoy doing various types of linguistic activities and his occupation profile attests to that. Wüster's transition from an engineer to a terminologist did not happen on a specific date. He was able to combine both disciplines with exceptional success over a span of 50 years by working at his tool firm and at several well-known institutions dealing with international communication already described in chapter 1.

In Europe and the Americas, the reception of Wüster's work did not take long. As outlined in Figure 18, 84 percent of the articles in our corpus represent the reception of Wüster's work in Europe. Compared to South America with just 6 percent, North America seems to be more enthusiastic towards Wüster's work with a percentage ratio of 10 percent.

Wüster's ideas as a terminologist circulated for the most part in Europe. That is why there is a high concentration of reactions and comments to Wüster's work in Europe, as shown in Figure 18 where 62 percent represents positive reception and 38 percent negative. This fact shows that in Europe Wüster's work was acknowledged. North America has also recognized Wüster's work. However, reactions count just for 10 percent of the total reception. Figure 18 displays 76 percent positive reception and 24 percent negative reception in North America. In South America, Wüster's work has been less visible as just 6 percent of our corpus attests. Figure 18 shows that 56 percent of these articles show a negative reception and 44 percent a positive reception in this part of the world.

Figure 18. Reception of Wüster's Work in Europe and the Americas
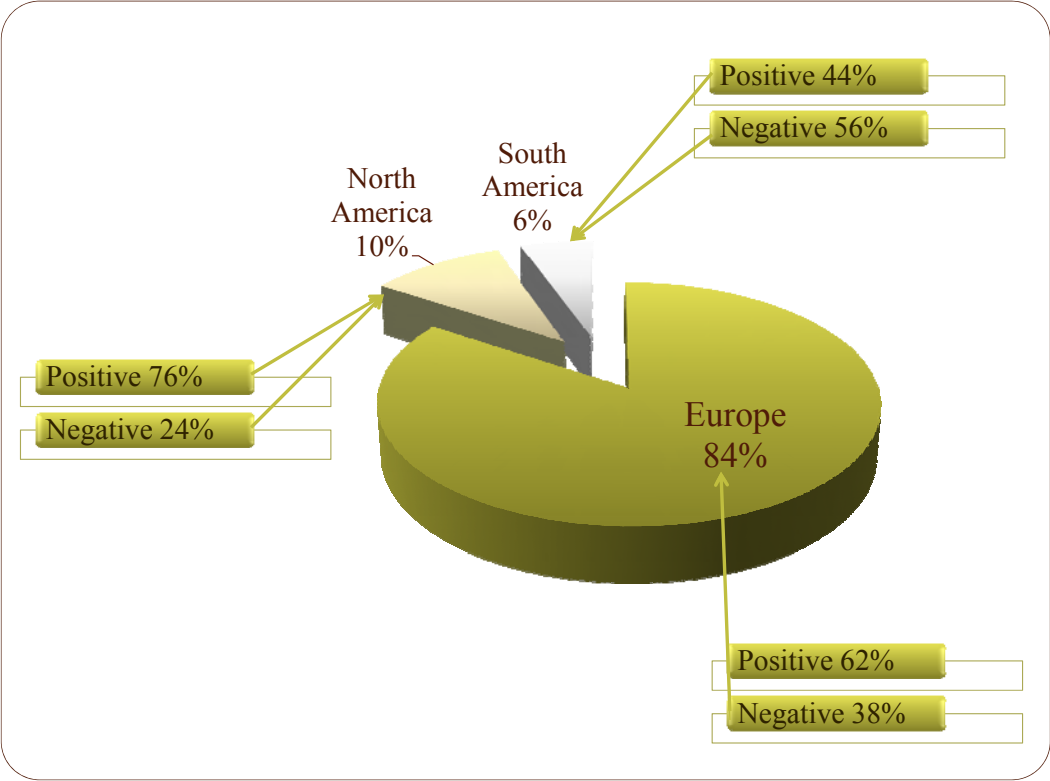
Before we embark on a geographical journey mapping the recognition of Wüster as a terminologist, a few characteristics common to most of the countries in Europe are worthy of further examination. In fact, two "pre-wüsterian" philosophic and academic factors in Europe may have influenced the acceptance of Wüster's terminology ideas. The first factor is the

prevalence in Europe of the positivist philosophical trend, originating in Austria and Germany to explain scientific knowledge from a logical perspective. The second factor is the application of these ideas to scientific and technical fields in international communication. These two factors, based on practical grounds, set the stage for the positive reception of Wüster's ideas following Wüster's lectures at Vienna University between 1972 and 1974.

Evidence of the positive reception is described in turn. Geographical differences in reception were evident outside Europe. In the Americas, the reception was conditioned by factors different from those of Europe dealing with terminological needs and linguistic situations. First, the state of terminological awareness at Wüster's time may have allowed or prevented the integration of terminology practices and research in different American countries. For example, the history of terminology research in Spanish, especially in South America, is short in comparison to that of Europe. While Wüster was known in South America by the 1980s, there was little awareness of his being an engineer. There is no evidence in the articles published by authors in this part of the world that suggest that he was rejected for being an engineer. He was accepted as the father of modern terminology without any hesitation. Second, specific linguistic situations, terminological problems and access to translations of Wüster's work into English, French or Spanish may have laid the ground for the welcome, as was the case in Canada. It was around the late 1960s in North America that some linguists began taking an interest in terminology. Compared to other European countries, terminology practice and knowledge began to spread in North America very late. It was through the interest of Canadian scholars that the first concepts and expertise linked to the discipline arrived in North America especially by the close relations and cooperation with Infoterm.

By the 1980s, terminology teaching and practice became quite widespread in North America, and several attempts to recognize and legitimate this linguistic practice began to appear. As terminology evolved in North American linguistic circles, connections with European terminologists increased. At the same time, serious interest concerning terminology practices led American linguists interested in terminology to collaborate more and more closely with European universities and scholars. North Americans produced quite sympathetic commentaries on Wüster's work. For example, Lethuillier (1980) asserts that in the field of

specialized dictionaries *The Machine Tool*, "au titre discutable et trompeur, fournit au traducteur un outil d'une exceptionnelle qualité … Les définitions, en anglais et en français dans le volume principal, allient clarté et rigueur" (p.108). By the same token, L'Homme (2006a) gives credit to the dictionary's conceptual structure. She says that "very few specialized dictionaries account in a systematic manner for the conceptual structure of a domain (a notable exception being, of course, Wüster 1968)" (p. 185). Similarly, in Europe, Wüster's theoretical and practical contribution to terminology is recognized as Resche (2007) emphasizes that "il est difficile d'évoquer la terminologie théorique et pratique moderne sans évoquer les travaux de Wüster et de l'École de Vienne, et l'ensemble de principes et de fondements qu'ils ont apportés, même si la pratique et l'évolution des techniques ont remis en cause certains des aspects mis en avant" (p. 24). It turned out that Wüster's entrance to Europe and the Americas was to a certain extent, accepted.

4.3.2 Conditional Recognition in English, French and Spanish

This section traces the positive reception of Wüster's ideas on terminology in the articles written in English, French and Spanish. It focuses on the way the English, French and Spanish-speaking communities positively received foreign language ideas on terminology. The results of our study are useful in this regard given that the first efforts to translate Wüster's German general theory of terminology were undertaken in English, French and Spanish. However, the lack of an officially published translation into English or French of the general theory of terminology results in insufficient testimonials of reader's awareness of Wüster's ideas on modern terminology. Today, more than 30 years after its posthumous publication, one may think that the time for translating Wüster's work has passed. Yet, translating it today would imply a different purpose. It may not be to make his theory known but to clear up his terminology ideas and views. With just one official translation into Spanish and one unofficial translation into English and French, terminology researchers have coped as best they can, wrongly or correctly, with Wüster's general theory of terminology.

A systematic history of Wüster's work and its reception outside Europe still needs to be written. Likewise, a parallel between the reception in different languages are yet largely unexplored. In the meantime, our study reveals that more has been written about Wüster's

work in English and French than in Spanish as shown in Figure 19. This fact will be explained in chapter 5, section 5.2.3.

The history of the English reception of Wüster's work is a rich account of positive acceptance. Figure 19 shows that 78 percent of our corpus accounts for a positive reception while 22 percent conveys negative reactions to Wüster's work. From a functional point of view, we may interpret these percentages in an effort to acquire a systematic view of terminology work and practice because English has served as a common means of specialized communication. Additionally, scientific, technical and academic development in the world is expressed in English. Once again, this may explain the high percentage of terminology articles written in English.

Figure 19. Reception of Wüster's Work by Language
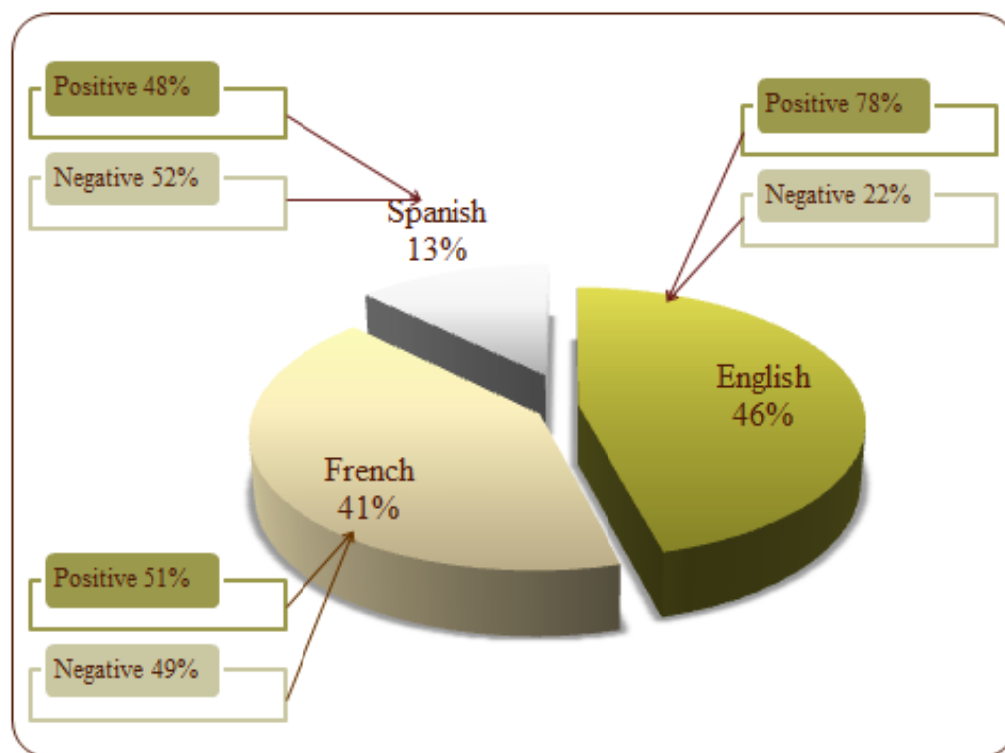
Contrary to what one might be tempted to think, in French the reception of Wüster's work is rather balanced. We were somewhat surprised to discover that 51 percent of the articles in our corpus convey positive comments about Wüster's work while 49 percent offer a negative reception. The difference is just 2 percent as 51 percent show a positive reception and

49 percent a negative one (see Figure 19). We may say that Wüster's reception is balanced with positive and negative recognition.

Terminology in Spanish-speaking communities has evolved as the result of importing ideas rather than as the development of unique proposals. Therefore, studying the reception to Wüster's work represents a fruitful pathway to the defining features of terminology in Spanish-speaking communities. As already shown in Figure 19, the reception in Spanish was also balanced since 52 percent of the corpus conveys a negative reception and 48 percent present a positive reception of Wüster's ideas. Based on these tight percentages, we may conclude that Wüster's work has not received a total welcome in Spanish. We will come back to the interpretation of these results in chapter 5, section 5.2.

In brief, the topic involving language between 1979 and 2009 is revealing. In the first case, despite the fact that most of the articles in our corpus come from authors working in France, the number of articles written in English is larger than those written in French. The second surprise is illustrated in Figure 19. In this case, the French reception, which could be negative due to the amount of publication written by the researchers from the sociolinguistic approach to terminology, shows an almost even percentage of positive and negative opinions about Wüster's work. Figure 19 for the Spanish reception is also revealing. It represents just 13 percent of the reception and a reduced corpus of articles compared to English and French. However, the reception reflects a more unenthusiastic reception. Finally, more and more expert and impartial understanding of this outstanding figure of modern terminology, both in terms of his systematic methodology and of his standardization principles, is at present more evident by the language of publication.

4.3.3 Topics of Positive Criticism

It seems that both Eugen Wüster and the terminology ideas that he advocated are controversial. He left loyal followers, but he also left many opponents who passionately contradict his views. Derived from our findings, there are still scholars in both the pro- and anti-Wüster camps who have presented knowledgeable arguments and perspectives. Still, for some, there may remain misunderstandings and misinterpretations about what Wüster really

said (see Candel, 2007). In this way, the description of topics of positive criticism is an attempt to help those who are interested in gaining a clear understanding of those Wüster's ideas that have been positively received, e.g., some of his basic terminological concepts and viewpoints such as the ones shown on Table 9. Our preliminary results are based on the belief that Wüster's approach, independent of its adequacy, remains lively and timely and provides a challenge to some of the traditional ways of thinking about terminology.

Table 9. Topics of Criticism by Type of Reception

Topics of Criticism	No. of Articles	Positive Reception	Negative Reception
General theory of terminology	39	26	13
History of terminology	20	19	1
Foundations of terminology	18	8	10
Standardization	17	9	8
Univocity	12	3	9
Onomasiological approach	10	8	2
Semiotic approach	10	6	4
Principles of terminology	7	2	5
Concept relationships	7	7	0
Linguistic awareness	7	1	6
Controversy around Wüster	6	6	0
Term, the concept of	6	3	3
Interdisciplinary field of study	4	4	0
Concept, the concept of	3	2	1

As seen in Table 9, the resulting differences in the topics of criticism are very clear indeed. The first column on the left reproduces the topics of criticism and the second the number of journal articles where the topic was discussed. The results, presented in the third and fourth columns, reveal the number of articles in which each topic has received a positive or a negative appraisal. In Table 9, several features of the results stand out. First, we could identify 14 main topics of criticism in the corpus on the reception of Wüster's work. The criteria for selecting these topics were based on content analysis as a diagnostic tool, which allowed us to review, define and identify specific data that could be measured in terms of topics of reception

(i.e. exactly which topics are criticised in Wüster's work). Some of these topics received more attention than others. Second, the topics that were positively received were the general theory of terminology, the history of terminology, the onomasiological approach, concept relationships, and the interdisciplinary field of study. Other topics, such as terminology as an interdisciplinary field of study and concept relationships did not receive any negative reception. Third, in our corpus, the last two topics of criticism, interdisciplinary field of study and the concept of concept, did not provide enough data to explain in detail here. What follows is a very brief overview of the most significant responses.

General theory of terminology: Eugen Wüster proposed a theory that he called the general theory of terminology. He, as an engineer, studied the terms related to electrical engineering and was probably irritated that they moved around scientific and technical environments without being studied. He soon found out that not only German terms but also other language terms showed irregular behavior. In the simplest possible terms, Wüster proposed the general theory of terminology which was officially introduced at the 3rd International Congress of Applied Linguistics, Copenhagen 1972. An article was then published in 1974 with the title "Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften" followed by the publication of his posthumous book the *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* in 1979. Basically the general theory of terminology refers to two fundamental elements: terminology standardization and terminology work (methodology). At the time, when no other terminologist was engaged in theoretical considerations, Wüster's theory was apparently well received. The theory seems to have obtained approval to fight against unambiguous international communication. Even today it constitutes the basis for practical approaches. For example, Savatovsky (2007) observes that:

> Les dénominations sous lesquelles paraissent les lexicographies philosophiques de l'époque se révèlent particulièrement instables. Les catégories auxquelles ces dénominations renvoient sont du reste assez peu thématisées dans les préfaces d'ouvrages ou dans les textes d'accompagnement. *Vocabulaire, terminologie, dictionnaire, encyclopédie, lexique,* etc. : ces notions y recouvrent des réalités fort diverses et celles de « terme » et de « mot » y sont le plus souvent employées *mutatis mutandis*. Depuis une quarantaine d'années, le développement de la métalexicographie et de la théorie de la terminologie (au

sein, puis au delà de l'École viennoise) nous a pourvus d'outils d'analyse permettant d'y voir plus clair. (p. 42)

Though the general theory of terminology failed to become a key subject of the linguistic approach to terminology especially for computational linguistic research, the potential implication of the theory in artificial intelligence was recognized by Nedobity (1985):

> Eugen Wüster has developed practice-oriented methods for conceptual ordering and economy. Especially the relationships between concepts can be used as signposts for tracing knowledge units in a bank. Furthermore, they facilitate the following functions of machines with artificial intelligence: classification (structuring), condensation, abstraction and association. (p. 18)

Derived from the results of our study, the general theory of terminology was a recurrent topic in the reception of Wüster's work and became central to Wüster's reception. Yet, it was the most positively criticized. Out of 39 articles, 26 showed a positive reception towards the theory and 13 criticize the concept negatively (see Table 9). It seems that there is general consensus on the fact that the theory first concentrates on setting up a methodology in order to get reliable data and eventually on extending views directed at terminology standardization.

History of terminology: The results of our study have shown that both Wüster and his work are recognized as fundamental to the history of modern terminology. Wüster is awarded the title of father of modern terminology, the founder of the general theory of terminology and a pioneer of terminology standardization. His doctoral dissertation, *Internationale Sprachnormung in der Technik,* has become widely recognized as the first step in the establishment of a systematic approach to terminology since its publication in 1931. Authors such as Grinsted (1997) have acknowledged the work of Wüster and the Russian engineers Lotte and Drezen in the history of modern terminology. Additionally, the early beginnings of terminology organizations, for example ISO for the standardization of terminological principles and methods and Infoterm, are considered Wüster's contribution to the field. Data from three articles by Galinski (1982, 1999, 2009) attest to that.

Indeed, some comments assert that there is general agreement on the disciplinary character of terminology, as it is conceived today. The discipline was established in the 1930s with Wüster's doctoral dissertation (1931) which sets out the methodological principles as

stated by Rodríguez Ortega & Schnell (2005a, p. 83). Similar comments are found in Roche (2005). Roche notes that "la terminologie 'moderne' prend véritablement son essor dans la première moitié du vingtième siècle à partir des travaux d'Eugen Wüster qui posent les principes méthodologiques du travail terminologique" (Roche, 2005, p. 51). In addition, results have shown that the history of modern terminology started with the publication of Wüster's doctoral dissertation. Today, both Wüster and his work are highly and positively referred to as classics in the history of modern terminology.

Onomasiological approach: The onomasiological approach to terminology has always been at the center of Wüster's work. At the basis of the onomasiological approach is the concept that needs to be named. This means that one has to analyze the concept; its constituting elements compared to others or related to others and the relation to other concepts in the same conceptual field. Related to the principles of the general theory of terminology, this approach has generated a sharp difference of opinion among language professionals about the risks it may pose for word formation and concept analysis. However, 8 articles in our corpus attest to a positive reception against 2 that found that the approach could trigger a change in methodology (Table 9). This may be true given that the textual linguistic approach to terminology is principally concerned with the way of collecting and analyzing language data. The textual linguistic research uses a different analysis as it is prone to use a word-to-meaning approach.

Results showed positive comments on the onomasiological approach referring to technical dictionaries that ought to be organized by semantic criteria. For example, Bagge (1983) notes that "les dictionnaires techniques doivent être présentés suivant un ordre sémantique et non alphabétique" (p. 391). This commentary suggests that the difference between the onomasiological and the semasiological approach becomes more observable in the fields of terminology than lexicography; an obvious comment implying a positive reception of the approach. Barrière (2004) also finds the approach important for terminology knowledge bases as she takes "inspiration from Wüster and Trimble, and work under the hypothesis that a TKB should be an organized collection of informative nodes, each one defining a concept of particular importance for the understanding of a domain" (p. 247). By the same token, knowledge bases are also a form of terminology akin to artificial intelligence tools for

collection, organization and retrieval of information. The onomasiological approach facilitates conceptual clustering (grouping concepts) in order to organize the content of the knowledge base. In general, the onomasiological approach has been applied to systematic research in terminography and artificial intelligence.

Concept relationships: As revealed in our corpus, Wüster's idea that a subject field is structured according to conceptual relationships has been well received. Results showed that all seven articles in which this concept was discussed (Table 9) acknowledged the value of connections between different concepts. Certainly, "the investigation of the relationships of concepts and their representation was the foremost activity of Eugen Wüster" (Nedobity, 1989, p. 24). Moreover, Antia (2002) explained that Wüster identified three approaches to work on terminology: "The approach of those who look at terms from the outside (perspective of documentalists); the approach of users of terms in texts (writers, translators, etc.); and finally, the approach of subject insiders interested in researching or representing the system of concepts and terms of a field (disciplinary terminology commissions, etc.)" (p. 108). Wüster's *Machine Tool* dictionary is a good representation of the subject field approach.

In some of the articles we have found that the data elements and concept relationships of *The Machine Tool* dictionary were important for the preparation of the multilingual term bank of the European Commission – EURODICAUTOM (today Inter-Active Terminology for Europe – IATE) as Felber, Galinski, Hofstädler, Nebodity, and Schöndorfer (1986) explained. The term bank arose in response to the need for terminology standardization. The preparation included the layout, arrangement, and content of terminological entries. Concept relationship conventions were also applied. But the situation has changed in the making of specialized dictionaries due to the contribution of a variety of disciplines. As L'Homme (2006a) observes, "very few specialized dictionaries account in a systematic manner for the conceptual structure of a domain (a notable exception being, of course, Wüster 1968)" (p. 185). *The Machine Tool* dictionary, in turn, owes much to library classification since the terms in the dictionary are arranged according to the Universal Decimal Classification system. In 1980, Lethuillier (1980) remarked that

l'originalité de l'ouvrage [*The Machine Tool*] tient avant tout au mode de présentation adopté, qui suit la classification décimale universelle. Une telle structuration, renforcée par des renvois systématiques, met en lumière les rapports entre les notions dont il est très facile pour le lecteur de faire l'apprentissage. (p. 108)

In this extract, Lethuillier considers Wüster's dictionary, with the systematic way of ordering terms, among the "bibles" for documentation in specialized translation. It is implied that terminologists, as well as specialized translators, work with concepts by means of definitions. Lerat (1990) additionally emphasizes that "l'essentiel du travail du terminologue consiste à repérer les relations qui unissent les notions entre elles" (p. 79).

Other scholars have been inspired by Wüster's concept relationships. One might mention Nuopponen (1994a, 1994b) who has concentrated on a comprehensive study of causal relationships. Nuopponen takes as a starting point Wüster's classification of concept relationships and focuses on expanding Wüster's classifications because "although he [Wüster] mentioned causality a couple of times he did not develop it further" (Nuopponen, 1994a, p. 532). In her own words "causality is a complex phenomenon and finding the causal connections of the subject field and of adjacent subject fields help us to analyse and organize the concepts and terminology of the field" (Nuopponen, 1994a, p. 537).

Interdisciplinary field of study: It seems that since Wüster published his article "Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften" in 1974, terminology has been recognized as an interdisciplinary field of study (see Humbley, 1996). Though the results of our study showed that just four articles in our corpus (Table 9) agreed with Wüster's interdisciplinary field of study, the content is significant for the purpose of our research. According to Wüster (1981), the term interdisciplinary describes studies that use methods and insights from several academic disciplines such as linguistics, logics, ontology, computer and information science. Nowadays, we can verify that terminology issues have emerged in conferences at interdisciplinary meetings and research centers and in collaborative projects involving researchers from several disciplines. That is why shared interests in terminology matters have provided grounds for cross-disciplinary research.

Even though terminology as an interdisciplinary field of study might sound pretentious, as Wüster (1974b, 1981) himself pointed out, it is true that various disciplines are needed for terminology research. Computational linguistics is needed for terminology applications; ontology helps in organizing knowledge domains in entities and their relationships; computer science facilitates information dissemination and information retrieval; other disciplines are also involved as Wüster one day envisaged. Basically, scholars have confirmed close relationships between particular disciplines. For example, studies carried out between terminology and documentation have required the elaboration of methods for the treatment and retrieval of information as well as for the construction of documentation languages. In this regard, Humbley (1998) adds that "depuis que l'informatique les a révolutionnées [terminologie et documentation], les ressemblances sont encore plus frappantes. La terminologie, devenue terminotique, intègre la documentation dans son fonctionnement de base" (p. 3).

Concerning the relation of terminology to computer science, Nuopponen (1996a) comments that since Wüster's time there have been developments related to terminology work and the distribution of terminological information. Nuopponen (1996a) also notes that even "today there are terminology data banks that Wüster dreamed about but in addition, specialist knowledge and terminology from almost any field is available also on the WWW" (p. 21). She concludes by saying that "the future as predicted by Wüster has arrived and the networked computers can be used to store and retrieve terminological information worldwide without any bigger time delays" (p. 24).

With this section on the positive reception of Wüster's work we provided an account of the results of the study taken from the corpus of 166 journal articles, as a measure of Wüster's impact on terminology from 1979 to 2009. Results showed that the reception of Wüster's work has given modern terminology part of its nature and represents a very fruitful way to developing new features of terminology. However, Wüster's work has not always been the object of positive criticism as we will see.

4.4 Overviewing the Negative Reception of Wüster's Work

The negative reception of Wüster's work seems to be based more around sociolinguistic matters than on the actual content of his work. The results of our study, as already pointed out in Figure 12 showed that 62 articles, out of 166 in our corpus, account for negative responses to Wüster's work. These 62 articles represent 37 percent of the total reception. From the collection of critical responses drawn from this specific corpus, it is possible to identify a set of recurrent themes that have come to dominate the unenthusiastic reception and to characterize the reactions of critics. Therefore, we intend to pay systematic attention to geographical and linguistic variables in order to emphasize the most negatively topics involved in the reception of Wüster's work. We would like to stress the fact that the negative reception of Wüster's work has opened paths to the development of terminology, a field in which the traditional approach to terminology is reconfigured in relation to other forms of terminological research and other social and academic contexts. As a result, the negative reception has identified limits to Wüster's contributions and thus called for different approaches in terminology research as described in chapter 3.

The results of our study show that Wüster's work was not immediately made an object of rejection or disagreement. On the contrary, he was mostly honored by his immediate contemporaries (e.g. Felber, 1980a). There is no evidence that he or his work, within his lifetime or immediately afterwards, caused much stir around his role as a pioneer in the field of terminology as explained in chapter 2. It was not until terminology research turned to descriptive terminology studies with the influence of linguistics that researchers brought to light the limits of Wüster's ideas. Although being influenced by structuralist linguistics, the most blatant criticism of Wüster comes from descriptive linguistics in general. The first half of the twentieth century was marked by increasing research in linguistic studies unconcerned with terminological considerations. At the same time, terminology research was establishing itself as a subject field and the general theory of terminology became the indispensable guide for terminologists. Consequently, both disciplines developed different views on the study of language and began to depart from each other where rivalry emerged. Though there are linguists such as Kretzenbacher (2001) who think that communication and cooperation in

terminology is not a matter of "You hit my Bloomfield - I hit your Wüster!" (p. 41). Others such as Desmet (2002) affirms that "la TGT et la normalisation ont finalement créé une rupture artificielle entre linguistique et terminologie qui a enfermé la terminologie dans une sorte de mentalisme dont Wüster lui-même se méfiait" (p. 161).

Serious criticism of Wüster began during the 1980s, with a particular breakthrough during the first part of 1990s, almost ten years after the posthumous publication of the *Einfurhung*. During the 1980s and even before, Felber (1973, 1980a) and Arntz (1981b) had already recognized that a potentially important new figure had emerged in terminology. However, through the first negative comments, authors transposed their own interpretation and opinions into the minds of others. These comments were consistently negative toward Wüster and his ideas and arguably led to further negative reception of his work (see chapter 5, section 5.1.2). A few first-hand commentaries on Wüster's ideas give adequate light on how the readers perceived his ideas. For example, in 2008, Condamines agrees with Slodzian about the idea that Wüster's terminology is rigid saying that "dans les années 1930, Wüster, le 'fondateur' de la terminologie moderne a proposé une vision très figée de la terminologie. Comme l'a montré Slodzian (1994), la doctrine wüstérienne se fonde sur le postulat d'une langue universelle permettant l'accès à la connaissance" (Condamines, 2008, p. 88). By the same token, Dury and Picton, based on Cabré's (2000b) comments, declared that "il faut peut-être remonter aux sources de la discipline, et évoquer notamment la Théorie générale de la terminologie (TGT), pour comprendre le manque d'intérêt suscité par la dimension diachronique" (Dury & Picton, 2009, p. 32). Dury and Picton see limits in the application of the general theory of terminology for diachronic studies. These are just two points of view concerning scholars' reaction to Wüster's ideas.

Focusing particularly on the negative reception of Wüster's work, we offer a detailed examination of the same three thematic topics described in section 4.3 for the positive reception, such as the reception by place, by language and by topics of criticism. Therefore, what follows is an overview of the negative reception in Europe and the Americas. These apathetic views are also noticed in the reception in English, French and Spanish. Finally, we will describe some of the most salient and criticized concepts of Wüster's work.

4.4.1 Still the Engineer in Europe and the Americas

Although Eugen Wüster's work received little negative criticism during his lifetime years, his legacy has been treated in many different ways. To most of his followers, he is the father of modern terminology who wrote a theory of terminology aimed at practical terminology research. He is also presented as a brilliant intellectual. However, after the posthumous publication of the *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (1979a), the critical reception of his work exploded. The negative reception represents 38 percent in Europe, 24 percent in North America and 56 percent in South America as already shown in Figure 18.

Wüster's detractors have found it hard to accept him as a linguist or terminologist and therefore have portrayed him as "a Viennese saw-manufacturer, professor of woodworking machinery, and devotee of Esperanto," (Smith, 2006b; Smith & Ceusters, 2007; Smith et al., 2005). Other scholars have affirmed that because of being an engineer he was not involved with linguistics. "The Austrian engineer, however, was not as interested in the strictly linguistic aspects of terminology as in the need to determine the accurate structure which organises scientific concepts at a given time" (Resche, 2000b, p. 629). Similarly, derived from his academic training he may be accused of standardizing terminology work. Condamines says that "Wüster est un ingénieur qui a publié dans les années 1930 [sic] un 'dictionnaire de la machine outil' et qui est considéré comme le père de la théorie terminologique (en tout cas dans sa version normalisatrice)" (Condamines, 2005, p. 36 Footnote 1). Here we have to clarify that *The Machine Tool* dictionary was published in 1968 and has to be viewed as an example of terminology applications and terminology work. As has been exemplified, some research in Europe as well as in America has treated Wüster as the Austrian engineer, businessperson, and author of a reductionist theory of terminology best left to standardizers of terminology. In spite of the fact that some scholars may have accepted him as a terminologist, they focus on the fact that he was an engineer by training. It seems to be a difficult task to accept him as a terminologist.

4.4.2 Negative Response in English, French and Spanish

Results have also shown a growing impact of Wüster's work; especially noticeable from the 1980s onwards in articles written in English, French and Spanish. Knowledge of Wüster's name is quite widespread in these languages. However, acquaintance with his writings is less well known. Figure 20 illustrates that the negative reception of Wüster's work in our corpus represents 37 percent of the total reception. It is most visible in Spanish with 52 percent (11 articles), although it may also be found in other languages, notably in French as 34 articles represent 49 percent, and lastly in English with 22 percent (17 articles).

Figure 20. Negative Reception of Wüster's Work by Language
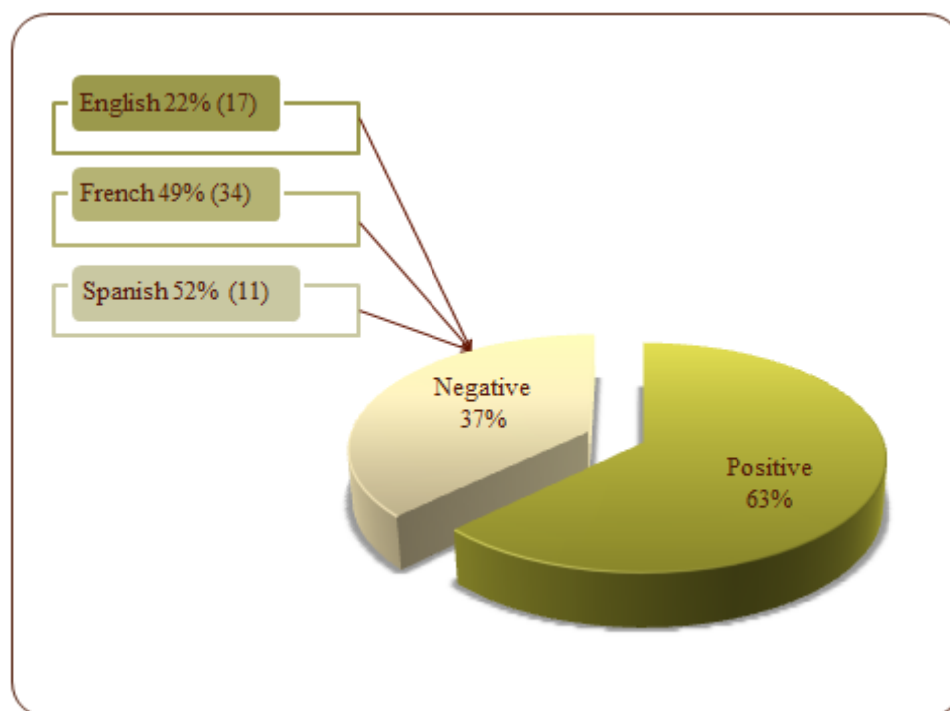
The countries of the Americas are fairly monolingual, with a heavy dominance of English, French, and Spanish in their respective places. However, it was not through translations into English, French or Spanish that Wüster's work was to be known. Corbeil (2007a) states that by 1970 in Quebec

> les travaux de Wüster étaient peu accessibles et peu connus en langue française. On lui attribuait l'idée que les termes renvoyaient à des systèmes de notions cohérents et hiérarchisés et que l'objectif de la terminologie était d'améliorer la

normalisation des notions et des termes pour une plus grande efficacité de la communication entre spécialistes d'un même domaine. (p. 97)

Concerning Wüster's reception of his German work in Spanish-speaking countries, we found that it was less enthusiastic than it was in French or English-speaking communities. This may be due to the fact that German was not a language of choice or preference among Spanish, English or French speaking communities in the Americas. It was not a language widely spoken in these communities either. Wüster's influence took time to register, sometimes after the 1970s, and sometimes only in the final decade of the century. Our study showed Wüster's presence in 21 articles written in Spanish out of the 166 of our corpus. Moreover, Spanish translations of Wüster's publications were dated after 1998 (see Wüster, 1998).

Wüster's achievements did not gain much public recognition in the sense that the *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (1979a) is still little known in English and French translations. In fact, these translations lagged behind publication. Were these translations responsible for Wüster being nearly unknown to English, French and Spanish-language readers? In any event, we are not sure that English or French translations are responsible for Wüster's language reception, poor reception or wide reception. Yet, Wüster's work has had an unenthusiastic intellectual response within French speaking communities. If the translations are not to blame, what is it? Why has his work had such a negative impact? We agree with Humbley's (2004, p. 49) observation that if Wüster's writings are not available in French and/or English it is unavoidable that we approach his work as second-hand readers.

4.4.3 Controversial Issues in the Reception

Wüster aroused more than his share of controversy, and it continues. He may be the most controversial figure in the history of terminology, although Drozd and Kandelaki, the founders of terminology in Russia, also merit consideration. Nevertheless, Wüster is not often taken lightly. He generally excites a definite reaction, sometimes positive but most often negative. He challenged established and cherished ways of thinking about language; in particular specialized language. This may be the reason why his views generated so much debate.

Based on the results of our study, we were able to identify some recurring issues of controversy of Wüster's views and some common misunderstandings that stem from the reception of his work. Some scholars are firm believers in one aspect of Wüster's views while the others believe in just the opposite, thus causing controversies. Results (Table 9) show that univocity, principles of terminology, linguistic awareness, and the foundations of terminology were the most controversial issues in the reception. The criteria used to identify these topics of negative reception are based upon a variety of negative comments that appeared repeatedly in the articles studied. For every issue there will be a brief account and examples that are taken from the data collected from our corpus. Let us look at some of them in detail.

Univocity. One of the most controversial issues in the reception of Wüster's work is the question of one-to-one relationship between concept and term known as univocity. This concept was negatively criticized in 9 articles and received some positive remarks in 3 articles (Table 9). Negative commentaries led to disbelieve in unambiguous international communication when finding observations such as "the theory of terminology and its unifying goal do not precisely reflect the reality they have to account for" (Cabré, 1995, p. 2).

For her part, Temmerman (1997a) questions the univocity ideal from the point of view of cognitive semantics and functional linguistics. Temmerman understands that "on the one hand all the Terminology schools underwent the influence of the leading trend in linguistics at the time of their heydays: Saussurian structuralism; and on the other hand the underlying motivation for each of the Terminology schools seems to be language planning" (p. 53). Díaz Rojo (2001) and Gómez González-Jover (2006) also adhere to the critique of univocity for terminology variation. In the same way, univocity does not contribute to a better understanding of legal terminology as stated by Ferrari (2002, p. 224). Dury (2005) shares the same view from the diachronic dimension which

> calls into question the principle first established by Wüster, and according to which each term is part of a scientific or technical discipline and corresponds to one notion only. The term is then viewed as a highly 'fixed' entity, marking clearly delineated conceptual spaces within a given domain of expertise, and is therefore protected from synonymy, polysemy and connotation. (p. 37)

Concerning standardization, Desmet (2007) said that standardization always take precedence over linguistic needs "d'où le refus de la terminologie classique à accepter l'ambiguïté et l'interprétabilité comme éléments constitutifs de la langue, de toute langue naturelle, y compris les langues spécialisées" (p. 4). Desmet (2007) further stated that "le terme n'a aucune valeur contextuelle ou pragmatique, car il est censé dénommer un seul concept bien délimité à l'intérieur d'un domaine de connaissances donné" (p. 4). From a linguistic point of view, terminology variation has shown that concepts appear in texts with multiple designations "ainsi, l'idéal de biunivocité terminologique de la théorie wüsterienne est nié, bien que la particularité sémantico-référentielle demeure indéfinie" (Freixa, Fernández Silva, & Cabré, 2008, p. 737).

Resche (2007) does justice to Wüster by saying that "il faut préciser qu'il avait conscience des variations linguistiques lors des échanges langagiers et avait lui-même fait le constat que 'même en terminologie, le désir de parfaite biunivocité doit rester un voeu pieux'" (p. 24). Finally, in spite of the above mentioned negative comments, there are still some scholars who find Wüster's univocity applicable "notamment à la régulation de la synonymie, contrairement à ce que disent ceux qui soulignent depuis longtemps la dénomination de la variation, .… Ces préceptes wüstériens sont encore directement applicables concrètement pour nos partenaires commerciaux, par exemple pour la régulation de la synonymie" (Lervad, 2009, pp. 74-75). What this may mean is that Wüster saw univocity not as a part of language in general but as an ideal for international communication.

Principles of terminology. Wüster's terminology principles, rules and methods are directly related to terminology work and to the Technical Committee 37 (put into operation in 1952) of the International Organization for Standardization (ISO). As Wüster was interested in developing an adequate instrument for terminology work, he considered it necessary to internationally standardize terminological principles. The ISO/TC37 has been charged with the principles and coordination of terminology. The principles that we know today are in the ISO 704: Terminology work - Principles and methods. "In order to prove the applicability of these terminological and lexicographical principles and to gain experience, Wüster prepared the dictionary *The Machine Tool. An International Dictionary of Basic Concepts* commissioned by

the European Economic Commission of the United Nations" (Felber, 1980a, p. 10). Schmitz (2004, p. 182) concurs.

However, the principles seen as a systematic process in which terminologists study specialized terms to meet the demands of specialized communication have been overtly criticized. According to our data, about 4 percent of the articles in our corpus have negatively criticized the principles of terminology. How have they been criticized?

Negative observations mainly concentrate on disproving terminology principles by doing terminology practice as Gambier (1991a, p. 41) states. For example, scholars such as Abbas and Picard (1998/1999) have found difficulties in following some principles of terminology in order to create an in-house company terminology. Initially, terminology work recommended context-independent terms. However, the need to have terms in contexts is concretized because "le besoin de retourner aux documents afin de vérifier le contexte dans lequel le terme est utilisé se fait ressentir de manière considérable" (Abbas & Picard, 1998/1999, p. 127). Moreover, it was difficult not to take into account polysemy and synonymy since "le terme prend sens dans son contexte d'utilisation" (p. 129). According to Abbas and Picard's (1998/1999) study, it seems that concepts do not strictly belong to one discipline thus "en terminologie classique, la création de classes universelles ne permet pas de refléter ce contact entre les différentes disciplines" (p. 129).

Temmerman (1998/1999, 2000a) had difficulties with terminology principles as well. She criticizes Wüster for reducing the field of terminology to a set of standardization principles. She concludes that

> on the basis of an empirical study of categorisation and lexicalisation processes in a corpus of English language scientific publications in the domain of the life sciences, we claim that traditional terminology theory (the Vienna School) has five principles which impede a realistic description of many categories and terms. (Temmerman, 1998/1999, p. 77), also stated in Temmerman (Temmerman, 2000a, p. 58)

These principles were summarized as onomasiological perspective, clear-cut concepts, traditional definition of concepts, univocity, and synchrony. Besides Temmerman, Bouveret (1998) has also taken exception with these principles because they are limited to

standardization purposes. Bouveret (1998) shows the difficulties by proposing four alternative assumptions:

> 1) Les systèmes de classification ne font pas du terme un taxon, ni un nom propre, ni une étiquette. Les termes opèrent une catégorisation tout comme les autres dénominations. 2) Le terme n'est pas monosémique, mais seul un «réglage de sens forcé» (Siblot 1989) évite les dysfonctionnements de sens. 3) Il n'existe pas une langue générale et une langue de spécialité divisée en domaines, mais le terme est un signe dont le fonctionnement est spécialisé par le contexte de référence. 4) Le concept n'est pas un simple signifié, mais une construction de connaissances. (p. 2)

Briefly, a simple analysis of the negative criticism of the principles of terminology shows that the opposition lies in the idea that terminology principles are centered on standardization.

Linguistic awareness. Wüster's understanding of how words and language work has been the subject of negative criticism too. About 4 percent of the articles criticize Wüster's linguistic awareness. The argument is made that, even though certain common relationships may be observed between common language and specialized language, the dynamics differ. The controversy lies in Wüster's apparent simplistic point of view on language, which is sometimes characterized as "reductionism." The assumption frequently made is that Wüster did not take into account the sociological aspect of language and that he had nothing to say about complexity of terminology such as that displayed in vulgarized communication "bien que Wüster dans sa thèse ait bien abordé le thème sous la forme de l'acceptabilité social de termes (WÜSTER 1931, 1970: pp.85-129)" (Humbley, 1989a, p. 98).

Criticism often focuses on the idea that language is more complex than it seems to be for Wüster. A suggestion is that terminology has to take into account an entirely diversified sociological context to make the description of language more real. Heid and Freibott (1991) point out that Wüster's theory does not take into account the study of collocations and that he "ne fait pas mention de la combinatoire lexicale, et les manuels de début des années 80, tels que Arntz/Picht (1982) en Allemagne, ne sont pas très riches non plus" (p. 84).

According to Condamines (1994), terminology has departed from linguistics due to Wüster's alignment to nineteenth century positivism where the basic philosophic task was to

clarify the meanings of basic scientific concepts. In fact, Condamines (2000) criticizes terminology works "à la Wüster" because they

> mettent la priorité sur les domaines, définis a priori, et sur les concepts, également définis a priori et considérés comme stables .… Dès lors, l'étude de la terminologie s'éloigne très nettement d'une perspective linguistique qui tient compte de la réalité des faits et non de postulats, et l'étude des corpus joue les trouble-fête. (p. 17)

That is why "les auteurs d'inspiration wusterienne [sic] ont totalement négligé le fait que les langues techniques sont des 'langues' et, comme telles, ne se réduisent pas à un vocabulaire. Elles forment un tissu constitué, comme tout texte, par des phrases, qui sont les unités constitutives de tout message linguistique" (Gross & Mathieu-Colas, 2001, p. 69).

To briefly review the critique referring to linguistic awareness, recently, in computational linguistics and related fields, there has been a deep interest in terminology. Although some of Wüster's critics believe that his approach is threatened by findings that suggest stronger linguistics influences than previously suspected, Wüster gave explicit recognition to linguistic variation as stated by Candel (2004):

> Il [Wüster] n'a pas fait de la normalisation technique ou terminologique de salon. Il connaît les réalités des échanges normatifs, et les fluctuations enregistrées lors des efforts terminologiques, il a su analyser les échanges langagiers qui font en grande partie l'intérêt des études de linguistique descriptive. Ce maître de la théorie terminologique invite aussi à prendre en compte ces variations linguistiques. (p. 30)

In the final analysis, maybe Wüster was right as far as international communication goes, but according to his detractors, his linguistic awareness certainly does not apply to the full complexity of language. Critiques insist on the idea that he did not even begin to capture the richness of terminology diversity and that the general theory of terminology and standardization are to blame because they have created a split between language and terminology as Desmet (2002, p. 161) pointed out.

Foundations of terminology. Still another topic that aroused controversy in the reception of Wüster's work was the foundations of terminology. The results of our study showed that comments on the origin of Wüster's ideas on terminology were present in 18

articles. Yet, 10 articles were not in favor of his view against eight that were. These 18 articles represent 11 percent or our corpus. Mainstream critiques concentrated on censuring the influence of the Vienna Circle ideas and that of logicists and positivists who dominated semiotics in the 1930s. In this sense, Wüster's ideas concerning the relation of language and science promoted a new attitude on how to reflect upon specialized language that some scholars seem to dislike. Results have shown that Slodzian (1993, 1995), Rastier (1995), Rey (1998/1999), Cabré (2003b), and Barona (2004), basically criticize:

1. Wüster's positivist idea on the objectivity of scientific knowledge and the purity of language representing that knowledge and the fact that he pretended terminology to be the exact reflect of scientific knowledge.

2. Wüster's assumption that language had a logical structure that reflects both the structure of reality and scientific thought and that it could only be expressed through the language of logic.

Initial criticisms questioned the epistemological basis of modern terminology from a historical perspective. The basis was questioned as terminology issued from the minds of technicians, engineers, and scientists such as "Cf. Schlomann, Dresen [sic], Wüster, Lotte, Caplygin, la Commission électrotechnique internationale" (Gambier, 1994, p. 245). Reboul (1995) disagrees with the referential view of terminology proposed by these scholars as "la mise en perspective du discours terminologique avec le discours de vulgarisation dans le domaine de la télématique, permet de relativiser les fondements théoriques de la terminologie, notamment ceux proposés par Wüster" (p. 298). Reboul rejects the existence of an ideal term that is well-motivated, transparent, and mono-referential (refer to one item only). Other critiques come from the field of artificial intelligence and from research in corpus linguistics. These critiques condemn the methodological foundations of terminology. Given that in corpus linguistic studies "les notions n'ont pas d'antériorité ou de priorité sur les mots" (Bourigault & Slodzian, 1998/1999, p. 31), Wüster's ideas are seen as too referential because words are considered labels for concepts; and taxonomic as there is a predominance of generic/specific relationships.

In brief, constructive criticism such as that of Nedobity (1988) and Budin (2003, 2006, 2007) asserts that philosophy and epistemology have contributed to enriching the theory of terminology, in providing answers to fundamental questions and questioning language. Finally, even scholars who accept that Wüster was influenced by Vienna Circle ideas often are not satisfied with his theory. In either case, whether it is believed that Wüster's fundamentals are inadequate or not, there is reason for strong reactions.

Terminology standardization. To conclude this section on the topics of controversy, it is necessary to briefly review the topic of terminology standardization, which is certainly another subject that seems very popular among Wüster's detractors. Criticism on this topic represents 10 percent of our corpus. However, it may be surprising that responses were very even; 9 articles are for terminology standardization and 8 are against. The concept of standardization is important in Wüster's terminology in order to facilitate international specialized communication. This assumption goes back to Wüster's early work in terminology with his doctoral dissertation about the standardization of electro-technical terminology. This idea remained with him throughout his many years as an engineer, terminology researcher and lecturer.

Positive comments deal with praising Wüster as the pioneer of terminology standardization (e.g. Galinski, 1988; Cabré, 1991; Corbeil, 2007a). On the one hand, terminology standardization has been valued as the process of making decisions to select terms. The decision process involves analyzing concepts in linguistic and economic terms, for accuracy and appropriateness reasons. Its primary purpose has also been acknowledged since it creates consistency in work procedures and facilitates the exchange and the use information between different systems used in diverse organizations, projects and environments. On the other hand, terminology standardization was not exempt from negative criticism either (e.g. Aito, 2000; Condamines, 2005, 2007, 2008). Wüster has been accused first of leaving aside social needs that are part of descriptive terminology. The basic assumption is that standardization serves first, for technical and scientific consistency. Second, for creating a normative terminology as the main objective knowing that the reality of terminology practice is different as it appears in real technical texts. Third, for believing that specialized languages are

perfectly apt to be standardized knowing that linguistic variation is seen in specialized texts. Finally, for considering terminology standardization the basic aim of terminology.

In summary, the results of our study show that Wüster's ideas still have much relevance for today's world. Modern terminology has definitely improved specialized communication, based on terminology standardization or not, Wüster's ideas disturb those who do not agree with the connotations of terminology standardization. It is true that he originally based his suggestion for improving terminology in findings from research on electrical engineering. There are still critics who feel that such findings are not relevant to all fields of knowledge and that they are inappropriate for other subject fields. His terminological concepts often have been interpreted simplistically. This has resulted in criticism from those who feel that he either ignored or denied the richness of terminology. In the next section, we give an account on Wüster's publications as quoted, cited and mentioned in our corpus of journal articles.

4.5 Wüster's Work Quoted, Cited and Mentioned

The present section shows the results of the analysis of the references to Wüster's work in 166 academic articles. Since bibliographic references are good indicators of the reception obtained by a given author within a specific academic community, we assess Wüster's impact in the field of terminology from 1979 to 2009. In Figure 21, the results of our study revealed that among the 166 articles studied, 73 articles mentioned and cited at least one of Wüster's publications, however, we did not find any verbatim quotations in these articles. Wüster's work was mentioned in 63 articles without any quotation or citation, though, we found 25 articles that mentioned, quoted and cited at least one of Wüster's publications. Four articles cite without mentioning or quoting Wüster's work. Finally, there was one article that mentioned and quoted but did not cite any of Wüster's work. The main topics that are examined in this section are verbatim quotations of Wüster's work and explicit reference to any of his works in the bibliography of the article as works cited. Our interest is to demonstrate how and to what extent Wüster's work is quoted, cited or merely mentioned within the limits of this empirical study. With this in mind, we prove knowledge, awareness, and familiarity of Wüster's work within the academic community. The results provided statistics for future studies to examine

not only the reception of Wüster's work in documents different from journal articles but also the influence on the development of terminology.

The report is presented in three primary sections. First, the findings on the reception of Wüster's work quoted (explicit in-text citation) will be discussed. Second, the findings from his works cited will follow. Citation refers to explicit references in the bibliography of the article. Third, Wüster's work merely mentioned in the text is presented. This refers to any general comment that does not refer to any specific work. What follows is an account of the findings based on the data extracted from our study as seen in Figure 21:

Figure 21. Wüster's Work Quoted, Cited and Mentioned

	Mentioned, cited but not quoted	Mentioned, not quoted, not cited	Mentioned, quoted and cited	Not mentioned but cited	Mentioned, quoted but not cited
Series1	73	63	25	4	1
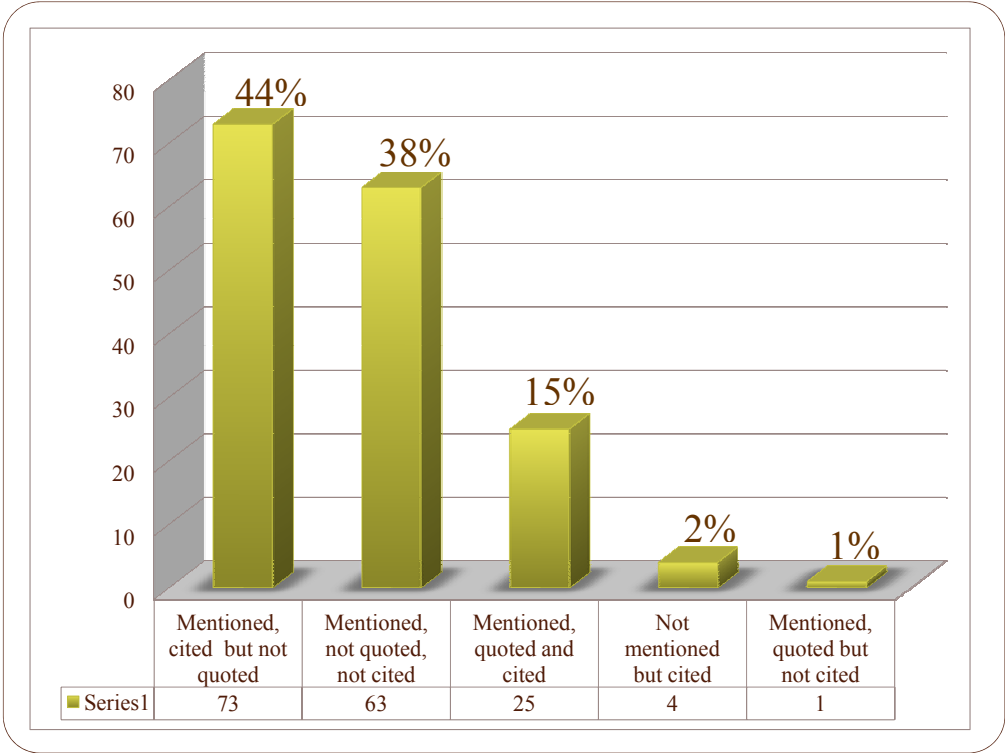
- Among the 166 articles studied, 73 mention and cite Wüster or some of his works (73/166 articles). However, there seems to be no need to quote any of them.
- There is a considerable percentage of articles that mention Wüster or some of his works, though they do no quote or cite any of his works (63/166 articles).

- Relatively few of Wüster's work are mentioned, quoted and cited at the same time in our corpus of journal articles (25/166 articles).

- Surprisingly just 4 articles studied make explicit reference to some of Wüster's work in the bibliography without making any explicit reference to him in the text.

- One of the articles quotes Wüster's work but the bibliographic reference does not appear in the bibliography.

4.5.1 Quoting Wüster's Work

Wüster's work quoted means a verbatim phrase, sentence or extract from any of his publications. The results of our study have shown that during the period from 1979 to 2009, Wüster's work was quoted in 26 articles. On average, the degree of quotation Wüster received in our corpus is inconsistent:

1. Quotations were found in 26 articles: 20 show a positive reception and 6 a negative one.

2. In total, German works were quoted in 14 articles: 8 in articles written in French, 4 articles written in English and 2 in articles written in Spanish.

3. Overall, 9 of Wüster's work were quoted as shown in Table 10.

Table 10. Wüster's Work Quoted

Year of publication	Wüster's Work Quoted	Times Quoted
(Wüster, 1985a)	*Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (2nd ed.). Copenhagen: Fachsprachlichen Zentrum, Handelshochschule.	10
(Wüster, 1981)	L'étude scientifique générale de la terminologie, zone frontalière entre la linguistique, la logique, l'ontologie, l'informatique et les sciences des choses (Bureau des traductions du Secrétariat d'État du Canada Trans.). In V. I. Siforov, G. Rondeau & H. Felber (Eds.), *Textes choisis de terminologie* (Vol. 1 Fondements théoriques de la terminologie, pp. 55-114). Québec: Girsterm - Université Laval. (Original work published 1974).	7
(Wüster, 1998)	*Introducción a la teoría general de la terminología y a la lexicografía terminológica* (M. T. Cabré, (Ed.) & A.-C. Nokerman, Trans. 1rst ed.). Barcelona: Universitat Pompeu Fabra. (Original work published 1979).	4
(Wüster, 1968b)	*The machine tool: An interlingual dictionary of basic concepts. English-French master volume - Dictionnaire multilingue de la machine outil: Notions fondamentales. Volume de base anglais-français* (1rst ed.). London: Technical Press.	1
(Wüster, 1970a)	*Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik. (Die nationale Sprachnormung und ihre Verallgemeinerung)* (3rd ed.). Bonn: Bouvier.	1
(Wüster, 1974b)	*Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften. Linguistics, 119*(1), 61-106.	1
(Wüster, 1979a)	*Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (1rst ed.). Vienna: Springer.	1
(Wüster, 2003a)	The wording of the world presented graphically and terminologically. (J. C. Sager, Trans.). *Terminology, 9*(2), 269-297. (Original work published 1959-1960).	1
(Wüster, 2004)	The structure of the linguistic world of concepts and its representation in dictionaries. (J. C. Sager, Trans.). *Terminology, 10*(2), 281-306. (Original work published 1959).	1

In general, quotations can measure the influence and the knowledge of the work of an author, so a review of the quotations of Wüster's work was conducted. The results revealed that there is still interest in his work. However, nine of Wüster's works represent quotations in a corpus of 166 journal articles. These are some of the authors that have quoted Wüster's work.

- Barrière (2004)
- Bergenholtz and Kaufmann (1997)
- Cabré and Estopá (2002)
- Cabré, Feliu, and Tebé (2001)
- Candel (2004, 2007)
- Condamines (2000, 2005)
- Desmet and Boutayeb (1993, 1994)
- Draskau (1991)
- Gabrielatos and Sarmento (2006)
- Humbley (1989a)
- Lager, Rodríguez, and Vergara (2006)
- Lerat (1988, 1989, 1990)
- L'Homme (2005)
- Manu (1980)

We consider that this number evidences either little knowledge of his work or a lack of interest. Indeed, we have found that Wüster is not a highly-quoted author. One feature may explain this fact; the access to Wüster's work in languages different from German was difficult. So far, we are unable to determine which factors contributed to the failure to access Wüster's work. The small number of quotations found in the articles provided proof that there is a very short list of the recurrent sources. As already shown in Table 10, the last six of Wüster's publications were just quoted once.

4.5.2 Wüster's Seminal Work Cited

Wüster's work cited means an explicit bibliographic reference to any of his works in the bibliography of the article as works cited indicating recognition of Wüster's work. Wüster's work has been regularly cited in the publications of leading terminology journals, in print and online. The results of our study have revealed citations in 102 articles out of 166. This descriptive account of the citations (bibliographic references) in the articles studied, established a trend to Wüster's publications and his most cited works. Figure 22 depicts the

breakdown between Wüster's work and the number of times the work has been cited in the corpus studied.

Figure 22. Wüster's Work Cited
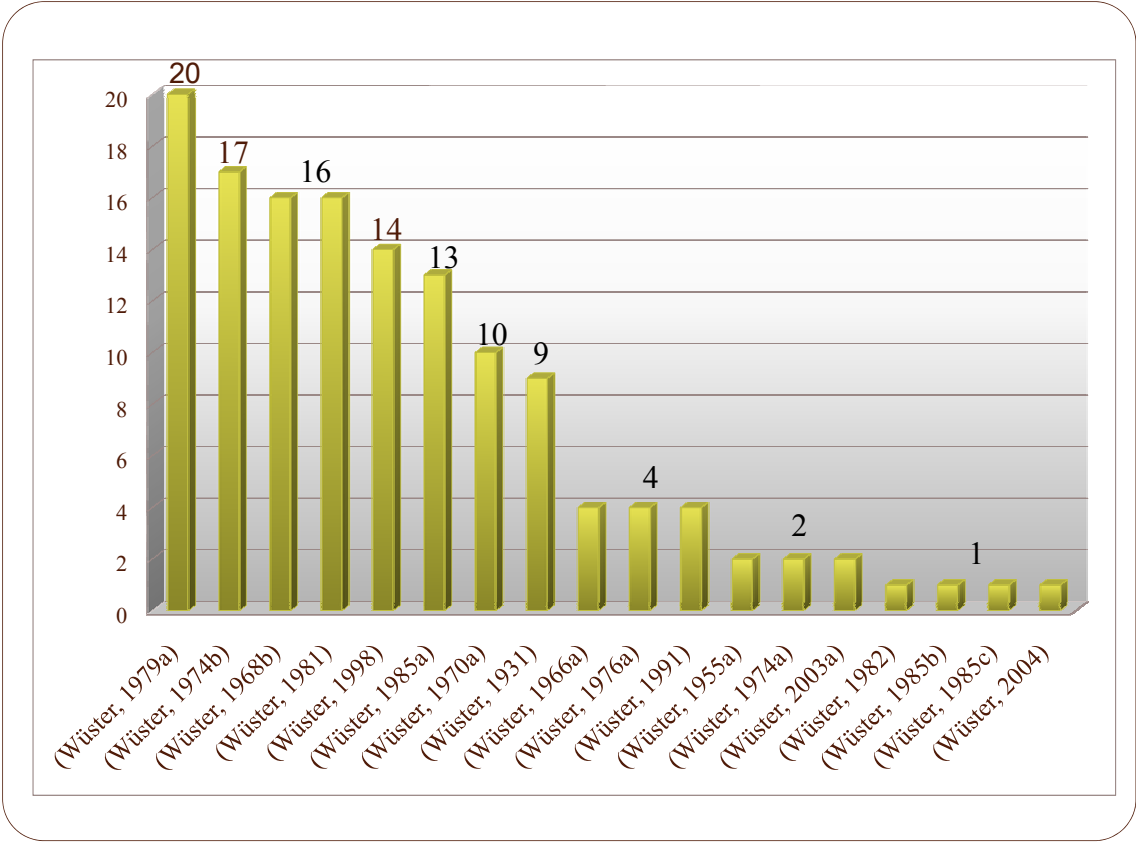
We conducted a review of the references cited in articles published in 39 academic journals, which revealed the most-cited works. Among the 18 works cited (Figure 22), only four were referenced between 20 and 16 times, with the majority cited between 10 times and once. Wüster's most-cited publications deal with his general theory of terminology (1979a), indicating a particularly fruitful time of terminology research and a particularly important group of researchers. Based on our citation analysis, we conclude that Wüster's classic works in terminology are most likely to be those that provide useful facts on the theory of terminology.

Table 11. Wüster's Work Cited

Year of publication	Wüster's Work Cited	Times cited
(Wüster, 1979a)	*Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (1rst ed.). Vienna: Springer.	20
(Wüster, 1974b)	Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften. *Linguistics*, 119(1), 61-106.	17
(Wüster, 1968b)	*The machine tool: An interlingual dictionary of basic concepts. English-French master volume - Dictionnaire multilingue de la machine outil: Notions fondamentales. Volume de base anglais-français* (1rst ed.). London: Technical Press.	16
(Wüster, 1981)	L'étude scientifique générale de la terminologie, zone frontalière entre la linguistique, la logique, l'ontologie, l'informatique et les sciences des choses (Bureau des traductions du Secrétariat d'État du Canada Trans.). In V. I. Siforov, G. Rondeau & H. Felber (Eds.), *Textes choisis de terminologie* (Vol. 1 Fondements théoriques de la terminologie, pp. 55-114). Québec: Girsterm - Université Laval. (Original work published 1974).	16
(Wüster, 1998)	Introducción a la teoría general de la terminología y a la lexicografía terminológica (M. T. Cabré, (Ed.) & A.-C. Nokerman, Trans. 1rst ed.). Barcelona: Universitat Pompeu Fabra. (Original work published 1979).	14
(Wüster, 1985a)	*Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (2nd ed.). Copenhagen: Fachsprachliches Zentrum, Handelshochschule.	13
(Wüster, 1970a)	*Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik. (Die nationale Sprachnormung und ihre Verallgemeinerung)* (3rd ed.). Bonn: Bouvier.	10
(Wüster, 1931)	*Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik. (Die nationale Sprachnormung und ihre Verallgemeinerung)* (1rst ed.). Berlin: VDI Verlag.	9
(Wüster, 1966a)	*Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik. (Die nationale Sprachnormung und ihre Verallgemeinerung)* (2nd ed.). Bonn: Bouvier.	4
(Wüster, 1976a)	La théorie générale de la terminologie - un domaine interdisciplinaire impliquant la linguistique, la logique, l'ontologie, l'informatique et les sciences des objets (Trans.). In H. Dupuis (Ed.), *Essai de définition de la terminologie. Actes du*	4

	colloque international de terminologie (pp. 49-57). Québec: Régie de la Langue Française. (Original work published 1974).	
(Wüster, 1991)	*Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (3rd ed.). Bonn: Romanistischer Verlag.	4
(Wüster, 1955a)	*Bibliography of monolingual scientific and technical glossaries - Bibliographie de vocabulaires scientifiques et techniques monolingues* (Vol. I: National standards). Paris: UNESCO.	2
(Wüster, 1974a)	*The road to Infoterm: Two reports prepared on behalf of UNESCO* (Vol. 1 Infoterm Series). Pullach/München: Verlag Dokumentation.	2
(Wüster, 2003a)	The wording of the world presented graphically and terminologically. (J. C. Sager, Trans.). *Terminology*, 9(2), 269-297. (Original work published 1959-1960).	2
(Wüster, 1982)	Exposé illustré et terminologique de la nomination du monde (Bureau de traductions de Canada Trans.). In G. Rondeau (Ed.), *Travaux de terminologie* (Vol. 2, pp. 25-76). Québec: Girsterm - Université Laval. (Original work published 1959-1960).	1
(Wüster, 1985b)	*Introduction à la théorie générale de la terminologie et à la lexicographie terminologique* (E. Brent, Trans.). Quebec: Girsterm - Université Laval. Unpublished manuscript. (Original work published 1979).	1
(Wüster, 1985c)	*Introduction to the general theory of terminology and terminological lexicography* (E. Brent & R. Alber-DeWolf, Trans.). Quebec: Girsterm - Université Laval; Secrétariat d'État; Gouvernement du Québec-Office de la langue française. Unpublished manuscript. (Original work published 1979).	1
(Wüster, 2004)	The structure of the linguistic world of concepts and its representation in dictionaries. (J. C. Sager, Trans.). *Terminology*, 10(2), 281-306. (Original work published 1959).	1

From Table 11 it can be concluded that the evolution of Wüster's bibliographic references in the 166 articles studied showed a clear tendency towards citing his German publications. The works cited are a quite good representation of Wüster's work. The most significant publication is undoubtedly his posthumous book on the general theory of terminology *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (1rst ed.) (1979a) (20 references), his article "Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den

Sachwissenschaften" (1974b) (17 references) and his dictionary, *The Machine Tool* (1968) (16 references). The fact that these three publications are Wüster's most cited works suggests that knowledge of his production is rather well known, however focussed on his most significant work.

Table 12 illustrates how the 18 publications were cited among the 166 articles studied. The results showed that, in general, Wüster's work has not been widely read.

1. It is evident that Wüster's work reached Europe easily since 15 out of 18 publications were cited, as detailed in Table 12. His work has also attained a more positive significance than in the Americas. The numbers with the circle highlight this fact. Moreover, most of Wüster's publications are cited in their German original version, as it is the case of Wüster's 1974b, 1979a and 1985a. Citations also come from French translations (Wüster 1976a, 1981), being the 1981 work more cited than the 1976a. English translations were not cited in Europe, but Wüster's original publications in English (1955a, 1968b, 1974a) received a positive reception. The circled numbers in the negative column of Europe also emphasize that those of Wüster's publications are cited to express a disapproving reception. For example, the Spanish translation of the general theory of terminology (Wüster, 1998) has been mostly used in articles conveying a negative reception.

2. It appears that in North America, based on citations of Wüster's publications, Wüster is infrequently read but have appeared homogeneously in the articles studied. At the same time, their reception has been broadly positive. Among the publications cited there are the *Einführung* (1979a), *The Machine Tool* (1968b), the translation of Wüster's (1974b) article into French and his doctoral dissertation (1931). It is important to note that among the cited publications, the general theory of terminology (1979a) was translated into English and French, but not published. It is not surprising that as the French and English translations were not officially published, they were evidently cited just once. This may indicate that either the translations are not well known or they were not worth citing since they were not official translations. Another important point is that Wüster's

translations into English (2003a, 2004) have only been cited in North America and only once.

3. It seems that in South America, very few of Wüster's publications are read. The *Einführung* (1979a) was cited just once, the translation of Wüster's (1974b) article into French was cited twice and Wüster's (1998) translation into Spanish was cited only once as well.

Table 12. Wüster's Work Cited in Europe and the Americas

		Negative			Positive		
		Europe	North America	South America	Europe	North America	South America
	Number of articles →	**53**	**4**	**5**	**87**	**13**	**4**
1	**(Wüster, 1979a)**	4			12	3	1
2	**(Wüster, 1974b)**	2			14		
3	**(Wüster, 1968b)**	3			10	3	
4	**(Wüster, 1981)**	6			6	2	2
5	**(Wüster, 1998)**	7		1	4	1	
6	**(Wüster, 1985a)**				12	1	
7	**(Wüster, 1970a)**				9	1	
8	**(Wüster, 1931)**				8	1	
9	**(Wüster, 1966a)**				4		
10	**(Wüster, 1976a)**	3			1		
11	**(Wüster, 1991)**	3			1		
12	**(Wüster, 1955a)**				1	1	
13	**(Wüster, 1974a)**				2		
14	**(Wüster, 2003a)**		1			1	
15	**(Wüster, 1982)**	1					
16	**(Wüster, 1985b)**					1	
17	**(Wüster, 1985c)**					1	
18	**(Wüster, 2004)**					1	

Based on our data, we conclude that although Wüster has enjoyed some popularity, he is still a less-than-familiar author for his readings and readers. Citations have shown the extent of interest in Wüster and have provided us with an idea of the regions where Wüster has

exerted greater influence in modern terminology. Wüster's publications are read and cited in Europe, however, in North and South America they are scarcely referenced in the bibliography list. At large, the general theory of terminology has been taken into account by scholars for the most part. Nevertheless, our data corroborates Humbley's (2004) opinion that the French reception of Wüster's work, with the exception of Quebec, is founded mainly on secondary and tertiary sources. In fact, results have revealed that in France Wüster's publications are barely cited.

4.5.3 Wüster's Work: Becoming Common Knowledge?

The analysis of 166 articles revealed that the work of Eugen Wüster is highly and simply mentioned, that is, making a clear reference or comment to Wüster or any of his publications in a written document without giving details or citing the reference in the bibliography. The absence of quotations or citations does not seem to be directly related to these journals' main topics of interest, since Wüster has been cited in other journals as previously mentioned. In 63 out of 166 articles studied, general reference is made to some of Wüster's achievements. Table 13 illustrates the references made to Wüster or some of his accomplishments. The general theory of terminology was very much mentioned without any of Wüster's publications being quoted or cited in the articles studied. Other works included his doctoral dissertation, his dictionary *The Machine Tool*, and some German articles. In other articles Wüster was related to the work he carried out for the ISO, UNESCO, and Infoterm. Some other authors only refer to his relation to the Vienna School of Terminology or the Vienna Circle.

Table 13. Wüster's Work Mentioned

Wüster's Work Mentioned	Number of articles
GTT-General Theory of Terminology	70
ISO-ISA	48
Th.D 1931	44
Vienna School of Terminology	38
E. Wüster Person	26
German articles	24
Machine Tool Dictionary	22
Infoterm	15
Vienna Circle	14
UNESCO	8
Wüsterian doctrine	6
Auxiliary Languages-Esperanto	2

Table 13 above shows that Wüster's work is considered general enough to be found in a variety of articles where the information has become widespread knowledge and where it seems that no reference citation is required. Humbley (2004) has already detected this practice and claimed that "on s'étonne que les représentants de la terminologie 'dominante' ne soient jamais mentionnés nommément. Wüster est invoqué plutôt que cité" (p. 48). For example, Wüster's general theory of terminology could be justifiably seen as a wide-spread work and is mentioned in 70 articles out of 166. The importance of studying Wüster's work quoted, cited and mentioned reveals much about the ways of thinking implicit in his writings, still waiting to be unpacked.

This brief description of results comes close to providing a sense of what the reception of Wüster's work is. We reported the results from an empirical study in a corpus of 166 journal articles. Results on the positive reception were described first, followed by the negative reception and the details on Wüster's work quoted, cited and mentioned. The results were

reported by focusing on the issues that best portray the reception. Four issues were most central. First, a geographical perspective on the reception of Wüster's work drawing accounts from Europe and the Americas. Second, drawing on the language view, we presented a report based on articles written in English, French or Spanish exploring the language dynamics underlying the reaction to Wüster's work. Third, we identified topics of criticism that were controversial issues which led to much debate and divergent opinions. Finally, we detailed how and to what extent Wüster's publications were quoted, cited and mentioned. The empirical analysis indicated that despite much controversy, the reception of Wüster's work has shown more positive reactions than negative ones. Chapter 5 will concentrate on the interpretation of these specific results and of the entire dissertation.

4.6 Conclusion

This chapter has summarized, in a descriptive manner, the results of an empirical study focusing on mapping the reception of Wüster's work in scholarly journals. The study itself was conducted on a corpus of 166 academic journal articles. Its principal purposes included identifying the standpoint of different scholars concerning Wüster's contribution to terminology, providing empirical data on the reception of Wüster's work, and uncovering the influence of his work for the development of terminology. The idea was not to rewrite everything that has been said about Wüster's work nor was it to find a way to defend or attack him or his theory.

Initially, inspired by the constant criticisms of Wüster's work, we proposed to study a corpus composed of a selection of professional journal articles in the field of terminology and related fields, published from 1979 to 2009 and written in English, French or Spanish. The corpus of 166 articles was analyzed to account for the current understanding of the reception of Wüster's work. The typical stages for this kind of study have been respected: the creation of a corpus, the collection of data, and the analysis of data based on several research questions. To obtain pragmatic results, a tool and a method were applied in the corpus of research techniques: documentary research, bibliographic databases, and techniques of qualitative descriptive analysis. After collecting all the information, reports were analyzed and important

issues emerged clearly from the study in order to highlight the reception of Wüster's work. Therefore, the results from this study support several conclusions, each with important implications for the development of modern terminology.

First, Eugen Wüster, the man, his work and his theory have captured the attention of an increasing number of scholars in different disciplines. Though not a terminologist by profession, mostly referred to as "the engineer," Wüster certainly stands at the center of modern terminology. As the results show, Wüster's profile is visible to the extent that it raises the question of why exactly this electrical engineer has suddenly captured so much attention in the field of terminology. In addition, what connection is there between the reception of his work and the history of terminology?

Second, reading and rereading Wüster's writings remains of interest to terminologists and linguists despite the fact that Wüster's work has been harshly criticized. One of the main reasons is that his ideas, though sometimes extended considerably beyond his research interests, are nevertheless grounded in terminology research. Wüster spent many years in his private firm, and important findings have been applied in the world outside the firm showing that he was not exactly what one might call an "armchair terminologist."

Third, Eugen Wüster and the general theory of terminology he proposed seem to be very controversial. He left loyal followers, but he also left many opponents who enthusiastically oppose his views. There are individuals, both in favor and against Wüster's ideas, who have presented well-informed arguments and new perspectives for modern terminology. Still, for many scholars there might remain misunderstandings and misinterpretations about what Wüster really said. This chapter has exemplified Wüster's legacy, his basic terminological concepts and perspectives, as well as controversies and misunderstandings regarding his views. We believe that Wüster's approach right or wrong remains lively and timely and provides a real challenge to some of our traditional ways of thinking about terminology.

Fourth, Wüster's name is widely recognized. It is well established that terminologists identify Wüster's contributions to the field. He is quoted, cited and mentioned in the terminology articles studied in this corpus. Our findings perhaps indicate wide acceptance of

the importance of Wüster's basic research and his terminological concepts. However, they do not necessarily indicate acceptance of his interpretations of complex terminological activities such as standardization or of his contribution to prescription in terminological methodology; there clearly are many terminologists who dispute his ideas and other issues.

With the presentation of these findings, we illustrate Wüster's reception in a relatively quick and simple way. The findings presented in this chapter consist of our analysis of the reactions to Wüster's writings after years of careful study. It may be said that a great deal was said in his many years of writing that could possibly be included here.

Finally, the findings presented in this chapter provided sufficient information to allow for a specific ground tour to follow Wüster's presence in academic journals. The next (final) chapter brings this study to a close and contains the interpretation of the entire research dissertation project. Arriving at a clearer understanding of the reception of Wüster's work, as well as its contribution to the development of terminology as a discipline has significant implications for the scientific growth of modern terminology. From a scientific standpoint, the interpretation of the reception of Wüster's work could provide a rational account of scientific progress in Lakatosian terms as will be the topic discussed in chapter 5.

Chapter 5

A Lakatosian Interpretation of the Reception of Wüster's Work

The main purpose of chapter 5 is to present the interpretation of the results of this research project. The interpretation takes into account the findings from the entire research project and the findings from the corpus of 166 journal articles (chapter 4). Our research project was carried out with the aim of exploring and analyzing the reception of Wüster's work in order to explain how it has influenced the development of terminology as a discipline. Throughout the process, we were guided by our main research question: How has the reception of Wüster's work influenced the development of terminology as a discipline? Reception theory (Jauss, 1982) and the methodology of scientific research programmes (Lakatos, 1978) provide the theoretical tools to answer the question and to interpret the results of the study. From reception theory, we adopted almost exclusively the concept of "horizon of expectations" as an interpretive model. In the same way, Lakatos' view of scientific research programmes serves as a means to interpret the growth of knowledge within the discipline of terminology.

With the completion of this dissertation, we have set out to capture the reception of Wüster's work entering and merging with contemporary terminology practices and to chart the changing condition of reception through the last thirty years. A critical reception results in two exploratory questions that serve as guidelines for the interpretation: How does the reception of Wüster's work reflect the growth of terminology, and how does the development of terminology become manifest in the growth of the discipline? Jauss' reception theory and Lakatos' scientific research programmes provide a conceptual framework for an empirical approach to these questions.

By considering the information provided in the four previous chapters, it is important to highlight that terminology is a rapidly changing field. Several new methodologies and technologies have developed considerably over the last thirty years. Indeed, the bibliography reflects the realities of a changing academic environment. Aimed at describing the

development of terminology, we interpret terminology from a Lakatosian view. We recognize this might prove to be a challenging task due to the complexity of the framework and to the lack of similar studies in the area. However, the Lakatosian framework shows that a coherent view of Wüster's reception can be accomplished by extending the scope of our understanding and by considering terminology as a research programme.

Briefly, the interpretation of the developmental perspectives of terminology within a Lakatosian framework is based on the results of the reception of Wüster's work. For this reason, we have divided the chapter in three sections. We first relate the results of the entire research project to reception theory and the scientific research programmes (section 5.1). Second, we interpret the findings from our corpus of 166 journal articles (chapter 4) by answering some questions and by taking into account the theoretical framework (section 5.2). Third, we recommend seeing modern terminology in Lakatosian terms; as a scientific research programme (section 5.3). By concluding this chapter, we show what the results mean, why they turned out the way they did, what the potential explanations of the results are, whether all the questions were answered, and whether some results require further investigation.

5.1 Wüster's Work as Seen from Reception Theory and Scientific Research Programmes

Social and historical factors are considered in reception studies for the interpretation of literary texts. The reception of Wüster's work, though not concerned with a literary work, is also determined by these factors and others that are closely related to academic backgrounds. Concerning reception studies, "the quality and rank of a literary work result neither from the biographical or historical conditions of its origin [*Entstehung*], nor from its place in the sequence of the development of a genre alone, but rather from the criteria of influence, reception, and posthumous fame, criteria that are more difficult to grasp" (Jauss, 1982, p. 5). Indeed, terminology scholars would understand Wüster's work based on their current academic as well as intellectual interests. Scholars who read Wüster's publications from different academic backgrounds would most likely have different reactions to it. By applying reception

theory, scholars' academic interests which affect the interpretation of the work influence the perception of terminology.

One important operation in reception studies is gathering the necessary information on how critics experience the work of the author studied. In our case, we extracted information from 166 academic journal articles to identify critic's reactions. The information turned out to be conflicting as critics may not be able to explicitly articulate how or why they interpret Wüster's work in a particular way. Critics' reactions have to be inferred by the researcher. On the one hand, the reception of Wüster's work is a continuing process where reflexive moments dominate. In general, Wüster's readers assume primarily a reflective role, followed by a more critical position. On the other hand, the reception is a dynamic process. In this particular instance, "the perspective of the aesthetics of reception mediates between passive reception and active understanding, norm-setting experience and new production" (Jauss & Benzinger, 1970, p. 8). In order to understand this situation, it is important to take into account the connection of his work to its academic context. The acceptance or rejection of Wüster's ideas depends on the critics' horizon of expectations, i.e., the critics' 'rules of the game' (Jauss, 1982, p. 88) that are influenced by familiarity with earlier texts related to the same topic. Each reader interprets or values the work depending on their background knowledge. Scholars with similar interests to those of Wüster's identify themselves with topics in the subject fields confronting the same or similar problems, which in fact, leads to Wüster's work being accepted or positively received. On the contrary, academic communities who do not have the same interests as Wüster's may reject his ideas.

In the next section, we explain how the concept of "horizon of expectations" is applied to interpret the reception of Wüster's work. We focus on the horizon of expectations because scholars from different disciplines identify and compare their research agendas with the one proposed by Wüster. For the reception of Wüster's work, we start by considering the various horizons of expectations that might have influenced how his ideas were received. Consequently, scholars experience Wüster's ideas based on their subject field background and the relevance of his work changes as seen from different disciplines.

5.1.1 The Horizon of Expectations of Wüster's Readers

Reading Wüster offers a revealing look into the complexities of unambiguous international communication, providing invaluable texts for someone who wants to confront specialized language barriers. However, a text cannot choose its reader. According to reception theory, the focus of interpretation of the reception must be placed on the readers as critics and on what they have to say about the text, given that "the historical life of a literary work is unthinkable without the active participation of its addressees" (Jauss, 1982, p. 19). Jauss' idea can be adapted to the historical life of Wüster's work where some questions help guide the observation of the reception: Who reads the text? What kind of background knowledge do the readers have? What effect does the text have on them? Answering these questions calls for a description of the criteria readers use to judge texts in any given period, that is, the term "horizon of expectations." As Holub points out, the terms "'horizon' and 'horizon of expectations' occur in a wide range of contexts, from German phenomenological theory to the history of arts" (Holub, 1984, p. 59). In fact, philosophers such as Hans-Georg Gadamer and Karl Popper used the term long before Jauss. Since the concept consists of readers' current knowledge and presuppositions about a literary work, Jauss argues that depending on the reader's horizon of expectations, the meaning of a text changes. What he means is "neither more nor less than that for each work a preconstituted horizon of expectations must be ready at hand … to orient the reader's (public's) understanding and to enable a qualifying reception" (Jauss, 1982, p. 79). In other words, when a reader approaches a text, the reader will have a specific belief of what will be encountered in that text.

For Hans-Robert Jauss (1984, p. 25), an appropriate study of any literary work involves a reconstruction of the horizon of expectations on the part of the critic. It is necessary to know the historical context of a work in order to appreciate it. For a literary work, the horizon of expectations is made of cultural contexts such as norms, values and criteria that shape readers' expectations. Applied to the context of terminology, the horizon of expectations of Wüster's readers involves the set of academic contexts that activate specific disciplinary practices. Such horizons are also subject to social, economic, academic and technological changes, so that other generations of researchers with the same or with different horizons of expectations may

246

find different significance in the same work. The consistency of this pattern is supposed to be noticed by Wüster's readers. In this sense, they may revalue the work accordingly.

Gathering the reactions of the readers to Wüster's work is not an easy task. With reception theory we identify possible reactions and interpretations at specific moments and distinguish the variety of academic identities and subject field positions that critics brings to the reception of his work. The basis to interpret Wüster's reception is that terminology researchers possess specific subject field identities, and as critics, they perceive Wüster's writings from diverse academic points of view. For our study, the horizon of expectations suggested by Jauss (1982) implies certain agreement among the participants of terminology whose expectations are conditioned by their theoretical approach to terminology. For instance, the results of our study demonstrate that critics of Wüster's ideas come from different disciplines, such as linguistics, philosophy, sociology, and lexicology among others (see chapter 4). Preconceived notions about Wüster's work also condition critic's expectations. A critic's experience of a work can be affected by what is known about the work itself; by its content or the circumstances of dissemination or production and by what others have said about it. This is better explained in Jauss' terms as the

> character of a work is to be measured by the aesthetic distance with which it opposes the expectations of its first audience, then it follows that this distance, at first experienced as a pleasing or alienating new perspective, can disappear for later readers, to the extent that the original negativity of the work has become self-evident and has itself entered into the horizon of future aesthetic experience, as a henceforth familiar expectation. (Jauss, 1982, p. 25)

Briefly, a review of the literature in terminology is likely to lead the reader to conclude that Wüster's ideas about terminology still dominate the field. His work, and that of his immediate colleagues, apparently constitutes a received view for most terminology researchers with the same or similar interests. The image of Wüster's modern terminology seems to have been built by his critics' works.

5.1.2 The Role of Criticism in the Reception of Wüster's Work

The question of criticism is linked to reception theory, which comprises a practical application of literary theory. In this dissertation, academic criticism, as distinguished from

247

literary criticism, assumes evaluating, analyzing, commenting and interpreting non-literary texts, as is the case with Wüster's writings. In the setting for the reception of Wüster's work, reception must be placed in a context, which permits critics to react accordingly. This implies that scholarly criticism becomes a topic of investigation in the study of any reception where critics are therefore, and in part, responsible for the status of Wüster's work. If we analyze this from a historical point of view, criticism has entered into a slow and circular process of impact for Wüster's next readers, whether this is intended or not.

Criticism has played an important part in the reception of Wüster's work and in the development of terminology. Debate, discussion and discrepancies among terminology researchers, as already shown in chapters 2 and 4, help better establish the facts at hand. Terminology needs more critics willing to assess terminology work, methods, and procedures to ensure realistic accuracy. Scholars in terminology have paid slight attention to the significant role of considering the merits and faults of Wüster's ideas. With this study, we have realized that criticism has been crucial for the development of terminology as a discipline as seen in chapter 3 with the new theoretical approaches to terminology. On the one hand, Wüster's work has been subject to both types of criticism; constructive and harsh. On the other hand, contextual factors (mostly academic and disciplinary), more than Wüster's work itself, influence the way a critic views Wüster's contribution to terminology. In this chapter, we treat positive and negative criticism in a constructive way, as a form of promoting terminology as a discipline.

For the interpretation of the reception of Wüster's work, contextual factors include elements that characterize the profile of critics as well as the situation in which the work was introduced, the critics' preconceived views concerning his work, their background knowledge, and even broad social, historical, and political issues. For example, linguists, philosophers, ontologists, logicians, and information scientists see terminology from different perspectives and provide the discipline with different and complementary approaches to terminology as seen in chapter 3. In short, reception theory places the critic in context, in relation to the various factors that might influence how the critic will make sense of Wüster's work, which takes into account the pragmatic aspects of term formation.

5.1.3 The Role of Criticism in the Development of Terminology

The rise of the debate around the reception of Wüster's work is concurrent with the development of new research perspectives in modern terminology. Our findings extend observations that terminology criticism has played a significant role in shaping concepts and methods employed in terminology, specifically in the new approaches to terminology. Criticism of Wüster's during the l990s can serve as a lens to examine the ways in which the need to solve terminology problems mirror specific terminology situations in more descriptive approaches. We can interpret this situation from the point of view of philosophy. Popper and Lakatos share the idea that criticism is a normal ingredient in any scientific activity. However, Lakatos (1978, p. 6) states that "criticism is not a Popperian quick kill, by refutation. Important criticism is always constructive: there is no refutation without a better theory." In Lakatos' view, criticism is not necessarily proving something wrong; it is instead for showing that the rationale of something is better served by an alternative approach. Wüster's controversy has similarities to what Lakatos states because the general theory of terminology has not been killed, it still serves its purpose, and the new terminology approaches are alternative solutions to specific terminology settings. Developments in terminology are related to criticism as they promote and highlight the growth of knowledge.

Applied to the reception of Wüster's work, our theoretical approach based on Lakatos' research programmes directs criticism to look for optional approaches, and to see changes in the discipline as a normal response to the possible limitations of one single existing approach. In this sense, criticism has played an important role for the progress of terminology as it has allowed the discipline to be open to new ideas that are highly resistant to criticism. We agree with the points stated by Lakatos: "while according to Popper science is 'revolution in permanence', and criticism the heart of the scientific enterprise, according to Kuhn revolution is exceptional and, indeed, extra-scientific, and criticism is, in 'normal' times, anathema" (Lakatos, 1978, p. 9). That is why a characterization of terminology in Lakatosian terms is fundamental to understanding how Wüster's work has survived criticism and how the discipline has implemented changes in methodological or theoretical background (see chapter 3).

In brief, the research agenda that arose in the discipline of terminology emerged with Wüster's pioneering work. Although the results of this study revealed that his reception was more positive than negative, when Wüster adopted the onomasiological approach to terminology in the early twentieth century, he met a series of unprecedented negative criticism of his ideas. While we have attributed the negative reception of Wüster's work to a variety of reasons, such as the possibility that readers interpreted his ideas with the intention of provoking a controversy, we re-examine these events using the Lakatosian view of criticism and the growth of knowledge and establish a difference in perception of the reception of Wüster's work. We assume that the resistance to Wüster's ideas on terminology was due to the readers' horizon of expectations and prejudices against standardization and that this predisposition influenced the expectations of future readers. This is better explained in Lakatos' words, "once a theory is discovered (or rather invented), it becomes public property; and nothing is more obvious than that several people will test it simultaneously and make, simultaneously, (minor) factual discoveries" (Lakatos, 1978, p. 115)

5.2   Thirty Years of Wüsterian Terminology (1979 to 2009)

For most terminology researchers, the name Eugen Wüster triggers memories of the Austrian engineer who develop the general theory of terminology. Based on the results of our study, it is generally accepted that modern terminology emerged in the 1930s with Wüster's publications. His work, starting from his doctoral dissertation (1931) until his general theory of terminology (1979a), established the first steps in methodological principles for terminology. His major concern was to standardize scientific and technical language for the benefit of international communication and as a solution to language barriers. Both his ideas and the methodology he supported have generated interest and discomfort in certain academic circles. That is why the reception of his work has been varied; both positive and negative, linguistically rich, geographically expanded, and chronologically delayed. These issues will be explained in turn.

The data in this section provide views on the reception of Wüster's work in consideration of explaining the development of terminology from 1979 to 2009. For this

purpose, we will take all of the information presented so far and interpret it taking into consideration the five questions raised in chapter 4, section 4.2. Considering the data that has already been presented, it may be beneficial to begin by answering these questions.

5.2.1 How Was the Reception of Wüster's Work between 1979 and 2009?

Wüster's influence on terminology, standardization, documentation and planned languages, among others, has expanded in time, scope and variety. Wüster's work still serves as authoritative writing in the twentieth century. His ideas are still present in the field of terminology where he is considered a terminology authority referred to and traditionally counted as the father of modern terminology.

From a chronological point of view, we found that the reception of Wüster's ideas can be divided into three decades as described in chapter 2 and confirmed in chapter 4. From 1980 to 1989, the posthumous reception was positive and peaceful. In general, this is due to the fact that the general theory of terminology was just entering the academic community and its first applications were taking place. That is why from 1990 to 1999 the reception was rich in volume but somewhat dissenting. This type of reception implies that it was the mature time; when the results derived from the application of the general theory of terminology were assessed by researchers in the field. The surge in reception was caused by the implementation of the general theory in the field. Finally, from 2000 to 2009, the reception was irregular meaning that there was disagreement among researchers who approved or disproved certain topics in Wüster's work. In this respect, our findings show that 14 topics of Wüster's work (Table 9) have been both positively and negatively criticized. For example, in a technology setting where standardization is accepted as the most direct route for commercial issues, its value is still highly recognized. Further commentary on this subject is found in sections 4.3.3 and 4.4.3. According to reception theory, we may interpret this situation in terms of historical context that deals with the relevance to contemporary terminology needs. It should be remembered that it was the time to re-examine the fundamentals of terminology. Additionally, critics, as readers, are requested to view themselves as historical subjects, whose function is to get acquainted with the historical contexts that affect their responses to the work. The results presented suggest a degree of anachronism. Critics have displaced Wüster's ideas in time since

contemporary responses have not taken into account the social and chronological circumstances that encouraged Wüster to propose his approach and theory.

From a theoretical standpoint, contemporary responses to Wüster's ideas bring together an overview of comments on the general theory of terminology, the pioneering theory in terminology. Comments show how individuals from a wide variety of backgrounds tried to make sense of the theory and its implications. Nowadays, it seems that when we read Wüster's general theory, we do so through a mist of commentaries contaminated by secondary opinion. From the point of view of reception theory, this means that any text is understood in relation to the 'horizon' of the critic's experience with previous "pleasing or alienating" explanations (see Jauss, 1982, p. 25). However, from a critical point of view, the reception of Wüster's work has been, surprisingly, more positive than negative.

What is so special about Wüster's theory? This theory was immediately recognized by the scientific community as having profound implications for normalization and standardization. Wüster's main goal was to address the apparent inconsistencies in international communication. No wonder Wüster named his doctoral dissertation *Internationale Sprachnormung in der Technik. Besonders in der Elektrotechnik* [International Standardization of Language in Engineering, Especially in Electrical Engineering]. In fact, the International Federation of the National Standardizing Associations (ISA) "triggered by the publication of E. Wüster's book … established in 1936 the Technical Committee ISA/TC 37 "Terminology" for the sake of formulating general principles and rules for terminology standardization" (ISO/TC 37, 2004, p. 2). The ISO foundation phase (1951 to 1971) was called "Wüster Phase" and "was very much governed by the strong character and convictions of Eugen Wüster" (p. 3). However, in a world where theoretical approaches to terminology dominate the scene of modern terminology, some may wonder if there is any room for traditional terminology. Although some of his ideas have been criticized, they are the doorway into the history of modern terminology, the set of tools with which to solve standardization problems, and the framework for contemporary research programmes in Lakatos' terms.

That which is nowadays called "traditional terminology" was once the only accepted approach to terminology. The theory emphasizes the value of concept systems for

terminological analysis and terminology work. Today, Wüster's ideas may appear irrelevant and even dated, but the theory has never been rejected, that is, killed in Popper's terms. Yet, when the theory first expanded through academic environments, it was considered the latest and greatest terminology approach. Even today, in the wake of globalization and terminology management his ideas have gained in importance. New products and technical documentation needs to be translated into different languages. Therefore, in order to facilitate translation speed and reduce inaccuracies, as well as get product recognition, companies opt for standardized terminologies and make them accessible to translators and localizers. At this point, it has to be clear that standardization is indeed essential in technical communication. This aspect is often forgotten by armchair terminologists. What critics consider as limitations in Wüster's approach, scientists and technologists consider as ways to relieve international communication problems in technology and world trade. In technology settings, concepts are defined during product development, and they are then given a term that is to be used repeatedly during the translation or localization process. By acknowledging all the applications, currently, traditional terminology serves as a pathway through time and the groundwork for terminology as a discipline. The fact that Wüster laid the foundation for terminology and that terminology can be seen as a research programme, in Lakatosian terms, is evidence enough for its relevance in today's world.

5.2.2 How Was Wüster's Work Received in Europe and the Americas?

Eugen Wüster's work has been received and interpreted in European and American countries with interest. However, its reception has had varying success. Among the topics discussed are questions arising from the commonly controversial character of some of Wüster's ideas and the various ways in which scholars from across Europe and the Americas coped with the specific postulates of his theory. Nevertheless, there is a significant difference between the almost satisfactory reception in European countries on the one hand, and the more reserved response in the Americas on the other.

The reception of Wüster's ideas was rich in substance and amount in Europe. A high point of acceptance of Wüster's work was reached for Europe, with the exception of France where his ideas did not match the terminology practices and serious criticism took place during

the decade of the 1990s with the appearance of socioterminology. How can we explain this rich reception? Geographically speaking, European countries are not only relatively close to the center of Wüster's ideas, but they are also sufficiently equipped with topics dealing with socio-linguistic and historical events that make Wüster's ideas relevant. Europe has had a rich history in terminology activities.

In North America, the reception of Wüster's ideas was significant, at least for Canada. By the end of 1970s, two of Wüster's substantial scholarly texts appeared in the province of Quebec and this gives the Canadian reception a special profile (see chapter 2). These two texts were the article "Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften" and the posthumous book *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (see chapter 4). Though today Wüster's ideas are considered historical, they help enrich the discussions around the discipline at the time when linguistic policies were much in need. No other American country had a corresponding strong and early research interest in Wüster's ideas. In North America, Quebec, Canada has also seriously focused on terminology research.

A delay in the reception of Wüster's ideas was the main characteristic in South America where terminology is still a young field of research. To our knowledge, the first research activities took place at the end of the 1980s (see Fedor de Diego & Boroni de Sánchez-Vegas, 1984, 1988; Osio, 2002). It seems that in South America, terminology has arisen as an answer to the immediate necessity of terms and words in the fields of science, humanities and technology. However, the delay in the identification of Wüster's publications can be ascribed to some circumstances. Among them, we can cite the original language of Wüster's writings linked to the delay in the translation of some of his most important texts; the difficult accessibility to his publications; the widespread influence of lexicographical studies; and, in general, the low interest in terminology of the time. By 1995 however, librarians, mainly in Colombia, although still conservative in attitude, had become interested in assessing the value of terminology as a theoretical discipline (see Múnera Torrez & Montoya Correa, 2009).

In summary, based on the results of our study, the reception in Europe and the Americas is to some extent dissimilar. We have found that several factors unenthusiastically influenced the reception of Wüster's ideas in the Americas. These included the role of linguistic needs, the scientific and technological debates that took place at the turn of the century, the availability and accessibility of Wüster's originals and translations and the interest from other fields of knowledge at the time.

5.2.3 How Was Wüster's Work Received in English, French and Spanish?

The reception of Eugen Wüster's work in English, French and Spanish was irregular. The percentage of Wüster's presence in the articles written in English and French was higher than in the articles written in Spanish. The results shown in chapter 4, section 4.3.2, were strictly descriptive. By answering this specific question, the results of this section are essentially interpretive. We interpret what the main results mean based on the 166 articles written in English, French or Spanish. First, let us remember that the percentages are largely dependent on the criteria for constituting the corpus and that the articles written in English represent 46 percent, French 41 percent, and Spanish 13 percent. Based on these percentages the reception in English was more substantial compared to the reception in French and in Spanish. This data brings us to the following interpretation.

The English reception was generous in number of articles and highly positive. In fact, the number of English texts was higher than the ones written in French and Spanish. This is a normal situation because researchers in any discipline are increasingly compelled to write in English. This reason explains why we find more articles in English unquestionably for reaching a broader audience. We have found that enthusiasm, apparently, has been largely motivated by the common means for specialized communication such as viewing scientific, technical and academic research expressed in English. Additionally, some of the most important academic journals in the discipline are mainly published in English. In this respect, we have to comment on the reception of Felber's *Terminology Manual* (1984), to our knowledge, the first manual written in English. By the 1980s, there was an interest on the part of UNESCO in disseminating terminological knowledge which gave an impulse to the field of terminology. For that purpose, UNESCO asked Helmut Felber to write a *Terminology Manual*.

The reception of Felber's manual by Dahlberg (1985) was not entirely positive concerning the presentation. In the book review, the author stated that it was a long-needed terminology manual in the English language but that she was "shocked" because the "manual arrived: as a Unesco report, the 426 pages being stapled only twice over a soft cover!" (Dahlberg, 1985, p. 45). Dahlberg also criticized the book by stating "the main part of the work is purely based on E. Wüster's philosophy of concepts and their relationships" (p. 45). Though Dahlberg welcomed the content of Felber's manual, it seems that she was expecting a brand new approach to terminology and not a duplication of Wüster's ideas. The manual, in effect, was distributed through UNESCO and was primarily intended to assist in the implementation of TermNet programs, specifically, the dissemination of Wüster's theory of terminology.

Concerning the reception of Wüster's work in the articles written in French, results show a large presence of Wüster's contributions. The articles found represent 41% of our corpus. This fact is because the reception is very much shared among scholars from the socioterminology, textual, and cultural approaches that developed in French speaking communities. Results also show a very balanced percentage of positive and negative reception. This reveals that Wüster's reception is evenly divided as 51 percent indicates a positive reception and 49 percent a negative. These evenly-divided percentages are surprising because we expect to have a high proportion of negative reception from the French community since the previously-mentioned approaches came from the negative reception of Wüster's ideas. However, this uniform reception can be explained because there are also scholars from the French and even German communities who have concentrated efforts on analyzing and/or defending Wüster's contribution to terminology. For example, Galinski (1988), Candel (2004, 2007), Humbley (2004, 2007), Budin (2007), Corbeil (2007a), and others have participated.

The Spanish reception was poor compared to English and French. In just 13 percent of the articles in our corpus, Wüster or his work was present. In addition, the reception was for the most part negative. This does not mean that the absence of Wüster's ideas in Spanish articles is explained by the fact that his ideas were unnecessary to the public, but rather because his ideas arrived in Latin America just as terminology activities were starting to grow in the academic community, and because terminology research only started late in the 1990s. We

may argue that the modest reception of Wüster's work in Spanish was influenced by some factors. Primary, his theory was not introduced until the mid-1990s. Moreover, his ideas and his approach could not be accommodated within the linguistic needs of the Spanish community (see Lara, 1986). This fact gives evidence that Wüster's publications were barely read in Spanish communities. Likewise, María Teresa Cabré's influence on the field in Spanish has prevented, in a certain way, direct reference to Wüster's work. Cabré's publications are very much cited in articles written in Spanish. Nowadays, there is a strong tendency to cite Cabré's interpretation of Wüster's work than to cite Wüster directly.

5.2.4 What are the Main Topics of Criticisms to Wüster's Work?

Criticism of Wüster's work encompasses a whole range of issues; nonetheless, they generally center on concern about the way to approach terminology. Results show that criticism includes the methodological impact that his general guiding principles have on terminology work. As a result, criticism comes from the five different theoretical approaches to terminology: socioterminology, sociocognitive theory of terminology, communicative terminology, textual terminology, and cultural terminology that have been described in chapter 3. This may be why the results of the study indicate a strong degree of criticism to traditional terminology. At face value, Wüster's work would seem to refer normally to the general theory of terminology where the study of the concept is at the core so much that often his view is referred to as the onomasiological approach. These differences in approach have shaped the topics of reception to Wüster's work and are explained in turn.

As mentioned in chapter 4, Wüster's most criticized topics include the general theory of terminology and univocity, among the ones shown in Table 9. For a better interpretation of the results, we decided to display results based on language of publication. Table 9 shows that, first his general theory of terminology received, surprisingly, the highest positive reception. Second, his contribution was also acclaimed positively for the history of terminology since most of the articles acknowledged his pioneering terminological ideas. Third, from the negative reception, scholars were not convinced of the foundations of Wüster's contribution. Finally, linguistic awareness and standardization received a high percentage of rejection.

Table 14. Topics of Criticism by Language of Publication

Number of articles / Topics of positive reception	English	French	Spanish
1. General theory of terminology	15	7	4
2. History of terminology	10	4	5
3. Onomasiological approach	5	3	0
4. Concept relationships	3	3	1
5. Interdisciplinary field of study	1	3	0
Number of articles / Topics of negative reception	English	French	Spanish
1. Univocity	3	3	3
2. Principles of terminology	1	4	0
3. Linguistic awareness	0	6	0
4. Foundations of terminology	2	7	1
5. Standardization	0	6	2

Considering the ten major topics of criticism of Wüster's terminology that have been presented so far, how can we explain these results? Beyond these topics, several reasons may be given for the disagreement over Wüster's ideas.

1. To some extent, the controversy found in the articles studied can be interpreted by taking into account the languages of publication. As Table 14 illustrates, articles published in English display a positive reception for the general theory of terminology and history of terminology. This may be because German-speakers have access to Wüster's writings in German and normally write their articles in English. The articles of our corpus written in French display a negative reception for foundation of terminology, linguistic awareness and standardization. This can be explained by the terminology studies carried out by the new theoretical approaches to terminology, which are mostly linguistically based.

2. Although Wüster's writings are not difficult to grasp, it seems that not all of Wüster's critics read his publications with sufficient care. In this way, criticisms can gain power, give rise to differences of opinion and generate confusion. In this respect, Candel's (2004) article is important, as she explains some sources of controversy and clears away confusions and possible misinterpretations.

3. Probably Wüster's widespread public reputation is due in part to the generalizations of his philosophy, which make his ideas seem more universal than they really are. Unfortunately, the real nature of the applications often remains vague in the eyes of his critics, and the potential benefits for scientific and technical standardized communication are ignored. A closer and clear look at the actual content of Wüster's proposals is needed to see what potential benefits exist.

4. The sociocognitive and the textual approaches to terminology have emphasized the complexity of separating general knowledge from specialized knowledge. Similarly, approaches such as socioterminology and cultural terminology have found the division of general and specialized language a difficult task. Lastly, the communicative approach has stressed the variety of communication settings and situations where terminology takes place.

5. A major misinterpretation regarding these topics is the common belief that Wüster's proposals are almost entirely opposed to the real practice of terminology. It is true that Wüster proposed a theory, name it general, universal or fundamental; nevertheless, scholars autonomously decide on their own methodology to do research.

So far, we have interpreted some topics of criticism related to Wüster's major sources of controversy and we have concluded that what Wüster did is similar to what is done in most disciplines. He studied terminology in its own environment, eager to find solutions for real-world international specialized communication needs. In brief, these topics of criticism suggest the variety Wüster's reception and reveal the broad impact on terminology settings. Besides all the controversy generated, there will continue to be those who have real disagreements with Wüster; opposition based on a careful understanding of what he said can be motivating and fruitful.

5.2.5 To What Extent is Wüster's Work Quoted, Cited and Mentioned?

At this point it is important to remember that Wüster's work cited refers to explicit bibliographic reference to any of his publications in the bibliography of the article. Wüster's work quoted means a verbatim phrase, sentence or extract from any of his publications. Finally, Wüster's work mentioned indicates a comment about Wüster or any of his publications without giving many details or citing the reference in the bibliography. Therefore, to answer this question it requires dealing with two related issues such as the dissemination of Wüster's publications and their accessibility. Then, it is a matter of checking references of those publications in our corpus of journal articles. In this respect, the results of our study have shown that:

- Wüster's work was mentioned in 163 articles out of 166.

- Wüster's work was cited in 98 articles out of 166.

- Wüster's work was quoted in 24 articles out of 166.

Since these results are strictly descriptive, here are some questions we might have to tackle to facilitate the task of interpreting what they mean. Do we have reasons to believe that the authors had access to Wüster's publications? If so, do we have reasons to believe that they read those publications? What evidence is there to show that Wüster was read? If they did read them, do we have reasons to believe they read the originals or the translations? If so, how would the reading of the originals or the translations affect the reception of Wüster's work?

Wüster's contribution to terminology was available given that there are 98 articles that cite Wüster's publications. UNESCO, the UN and Infoterm were very much involved in the dissemination of terminology theory and practice; among the tasks of Infoterm were the circulation of Wüster's work and the coordination of terminology activities. "Especially the volumes of the Infoterm Series contributed much to the worldwide dissemination of terminological knowledge. Besides a shelf full of monographs, Infoterm staff members prepared innumerable papers and documents to be presented at meetings and to be published in specialized journals" (Infoterm, 2004, p. 12). Access to Wüster's publications was possible through the Infoterm working programs on the dissemination of the general theory of

terminology (see Felber, 1974a; Felber, Galinski, & Nedobity, 1982). That might be why Wüster's *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie*, 1st and 2nd editions, "Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften", *The machine tool*, and "L'étude scientifique générale de la terminologie, zone frontalière entre la linguistique, la logique, l'ontologie, l'informatique et les sciences des choses" were among the most cited and quoted publications. Yet, the number of articles in which Wüster's work was cited or quoted is not representative of Wüster's contribution to terminology if compared to the 166 articles analyzed. In this regard, we agree with Antia (2002) when he says that "it is striking to notice how, in criticisms of Wüsterian terminology, Wüster is scantily cited" (p. 110).

We have reason to believe that the authors of the articles read those publications because at least some of Wüster's publications were quoted in 24 articles. Moreover, translations began to appear in the late 1970s (see Wüster, 1976a, 1979b; 1979c, 1981). Evidence is seen in 166 academic journal articles where his work was mentioned, quoted and/or cited. Chapter 4, section 4.5 presents a statistical overview of Wüster's reception seeking to identify which publications were quoted, cited and mentioned when and how often.

Both originals and translations were read; at least some of them were quoted and cited. In general, Wüster's name seems to be well known although most of his publications seem to be hardly read. The results of our study show a lack of verbatim quotations and a frequent trend of repeated commentaries. During this time, only a few publications by Wüster ever found their way into the articles; most of his ideas never received significant recognition since only some of his publications are quoted in a few articles. Recent interest in Wüster has revealed that although his ideas seem to have received great acclaim, his approach to terminology is presented, for the most part, by his disciple Helmut Felber. In this regard we shall cite Antia (2002): "with this book [*Terminologie und Wissensordnung. Ausgewählte Schriften aus dem Gesamtwerk von Eugen Wüster* (Picht & Schmitz, 2001)] allowing Wüster to severally articulate his ideas, some of the excuse for reading him through Felber, for instance, is gone" (p. 110). Though terminology researchers can now access Wüster's ideas

through his assembled articles (see Picht & Schmitz 2001) and not via the Felber manual (1984, 1987a), this collection of articles is still in German. We may say that even today, it seems that Wüster's own ideas remained largely unknown to terminology and linguistic scholars. Nevertheless, it is true that in France and in the Americas Wüster's work was mostly known through translations.

Reading the originals or the translations may have really affected the reception of Wüster's work. However, results show that first, Wüster's (1968b, 1974b, 1979a, 1985a), German originals, and his (1968b), *The Machine Tool*, are the most cited of his publications though they may not be the most quoted. Second, these five publications were mostly cited in Europe at a very high rate if compared to the Americas. Third, in the articles where these five texts were cited, the reception was beyond positive as shown in Table 10. With these results, we can confirm that Wüster's influence is most positively understood through his German contribution to terminology than by corresponding translations. His German writings had a stunning impact on terminology scholars in their study of terminology.

The results above are significant for the reception of Wüster's work and lend themselves to some observations.

- Wüster's publications have followed a surprising citation trend. An examination of the distribution of the citations has shown that just mentioning Wüster or any of his publications has a high and increasing rate. What is perhaps shocking is the relatively low direct quotation rate.

- Wüster's work has been influential beyond his field of study. Considering that Wüster was highly criticized for being an electrical engineer, it is unexpected to see his impact on applied linguistics, information science, and artificial intelligence among the most obvious.

- Progress in the accessibility of terminology information has led to increased citation rates. During the last few years, we have seen Wüster's publication citation rate increase showing that his ideas are still relevant to current researchers, and that the basic principles outlined in the general theory are still of interest.

In this section, we highlighted publications that were mentioned, quoted and cited in journal articles and proved Wüster's possible impact on the field of terminology. On the one hand, insights into the reception of Wüster's ideas do a lot to enhance our understanding of the development of terminology. On the other hand, Wüster's authentic views seem to be barely known to linguistic scholars. Some criticism shows only a superficial knowledge and understanding, especially of his philosophy of language and of his work in general. Wüster continues to be widely mentioned as a terminologist, theorist, and as the father of modern terminology. Some referred to Wüster or his work as if to common knowledge.

5.3   Lakatos' Framework for Modern Terminology

The focus of this section is to interpret the complete situation on the reception of Wüster's work. For this purpose, data not only from previous chapters but especially from chapter 3 is taken into consideration. This decision was made because the last thirty years of research within terminology has witnessed the development of a number of terminology approaches that are closely related to the criticism to Wüster's ideas. While all of the approaches have proved to be very successful in providing new methodological channels for terminology research, there is still a general tendency to line-up criticism to oppose the traditional theory of terminology. From our point of view, these terminology approaches should not be viewed as theories subject to Popperian falsification, but rather as part of a Lakatosian research programme. This issue is explained in turn.

Ways to surpass the modern terminological debate around Wüster's ideas are diverse. For some, to enlarge Wüster's theory, for others, to look for foundations that give light to a new theory based on a more linguistic and socio-cultural nature. These two general views gave light to new theoretical approaches to terminology such as the ones described in chapter 3. Since a Popperian or a Kuhnian framework to explain the current debate on terminology finds it difficult to account for the actual scene of terminology knowledge in the face of these theoretical approaches, we turn to a description of terminology as a research programme relying on Lakatos' framework, as explained in the introduction of this dissertation.

For the findings of our study, Lakatos' framework is particularly attractive. We aver that Lakatos' work is of key relevance to explain modern terminology as it suggests ways to historically explore and represent the development of knowledge in terminology. First, it follows that research programmes offer a more practical view of the development of terminology by understanding its theoretical and empirical progress. This is so because programmes are established through the slow accumulation of research projects as we have already demonstrated in chapter 2, section 2.5.4. We find Lakatos' research programme to be the best-structured philosophical guide to demonstrate the progress terminology has made during last thirty years with the new theoretical approaches. Second, given that within any research enterprise there is a common node of interests or hard core and there are suggestions on how to develop new theories around the hard core, the research programme proposes ways of appraising theories, which in our case are terminology approaches that follow a single thread running through the entire discipline. Third, Lakatos offers philosophical arguments about the structure of disciplines, which implies a three-dimensional configuration for terminology. In general, the programme consists of three concentric layers. The hard core includes the basics of the program, which are guarded by a protective belt or negative heuristics composed of terminology approaches. The outer layer is known as the positive heuristic. It is represented by general guidelines to explain known phenomena or to predict new ones.

Whether or not it is the best model to explain the debate on the reception of Wüster's work and the development of terminology, Lakatos' scientific research programme offers possibilities for a better understanding of progress in the field of terminology. For example, first, criticism may be a matter of reflecting on the theoretical and practical merits of the different approaches to terminology, and not only a critical response to one single theory, e.g. the general theory of terminology. Second, various terminology approaches exist simultaneously, especially in a period with dynamic research. As these approaches move around a central core of ideas, they are accessible to researchers for application and assessment. Third, some terminology approaches may be very specific and thus restricted models that solve particular terminology problems. Finally, in Lakatos' terms, terminology approaches form a protective belt of the programme and consolidate its hard core.

Lakatos' methodology of scientific research programmes provides a practical account of the history and development of science, and may be of much interest to terminology researchers. Our opinion is that it is especially relevant to terminology because it provides the means to explore the history of the reception of Wüster's work and to interpret the history of terminology research. We think that Lakatos' scientific research programme could be used to address the field of terminology, helping to:

- Clarify the current debate on terminology and the structure of the discipline by describing terminology as a scientific research programme
- Explore the programme by identifying its components
- Appraise the growth of the discipline by using the concepts of progressive and degenerating research programmes

5.3.1 Interpreting the Competing Approaches to Terminology

Our focus here is centered on interpreting the importance of the emergence of the new theoretical approaches to terminology. The issue of controversy surrounding the validity of Wüster's work has been raised by these new theoretical approaches to terminology. In fact, Wüster made an important contribution to terminology by being the first to offer a theory and to suggest a working methodology. For more than thirty years Wüster's general theory of terminology has provoked inconsistent readings, commentaries and criticism. Reactions to his ideas have caused important debates whose examination allows a variety of possible interpretations. Such interpretations imply different theoretical approaches that justify everything or part of Wüster's legacy. The interpretation of our results suggests at least three main reasons for this situation. First, the different terminology approaches that exist today have proceeded methodically to accomplish what is to be studied for specific social and cultural contexts. Second, the activities, steps, tasks, and terminological procedures are supported by the development of technological applications where computational linguistics is just one of several available technologies. Third, new approaches enable new methods defined as the way to attain a certain end to treating a set of terminological problems. The result is a rich theoretical account about the current terminological research reality under study. Our statement is that a variety of approaches offers a fuller and therefore improved connection with reality.

The variety of approaches in terminology provides research methods and tools to understand the complexity of the situation in the growing discipline, as a source for more advanced research. In terms of multi-disciplinarity, Sager (1979) has pointed out that "a coherent theory of terminology would need to combine all three approaches [linguistic, concept-oriented, user-oriented] and the fact that hitherto these areas have largely been studied in isolation is mainly due to the heterogeneous background of the researchers who have contributed to the theory" (p. 151). However, being as it is, terminology approaches have made available a broad range of methodological options for a reasonable coverage as we attempt to uncover terminology as a research programme. Such variety makes it possible for researchers and terminologists to choose from a pool of approaches the one that better fits present needs.

Today, both traditional terminology and modern approaches to terminology have generated diverse reactions. From a consensus point of view, it seems that none of the approaches can account entirely for the kind of "terminology" that goes on in technology and science. Neither they can account for the precise practical approach in all languages. Modern approaches are certainly improvements in many ways, yet several terminological problems persist. From a Lakatosian point of view, the new approaches may have adopted the "hard core" of the programme proposed by the traditional terminology, but they altered its "positive heuristic," that is, the suggestions on how to develop the programme and on how to provide a more robust "protective belt," namely, the new terminology approaches. The novel aspects of these approaches are consistent with the contemporary terminological needs, which open the path to the growth of knowledge in terminology.

We move now to the importance of the growth of terminology for our interpretation of the development of terminology. While to our knowledge, nobody has explicitly adopted Lakatos' scientific research programmes to explain the growth of terminology, we have applied it to the discipline in order to describe modern terminology as a research programme. The Lakatosian view of modern terminology is that the programme develops over time, partly because terminology scholars propose a basic theory and then detail its specific components, and partly because constant research in the discipline meets specific terminological needs. Lakatos (1978, p. 47) observed that there is a continuity of theories, that in our case are

approaches to what he referred to as a research programme, and that the empirical difficulties of one theory generate modification of that theory, rather than a complete rejection of it, as will be the case of Wüster's general theory of terminology.

5.3.2 The Growth of Knowledge in Terminology

To meet the main objective of our research project, it is important to analyze the development of terminology as a discipline because our hypothesis is that the reception of Wüster's work has influenced the progress of the discipline. Looking retrospectively at terminology at the beginning of the twenty-first century, we have to emphasize the great achievements the discipline has made in terms of improvement and concrete results. For example, the modern terminology that Wüster pioneered is presently a network of interconnected approaches that is best regarded as a Lakatosian research programme. By exploring the history of the reception of Wüster's work, we necessarily reveal a research programme and a view of the growth of knowledge in terminology.

To provide for the interpretation of the growth of knowledge in terminology, we took into account the social conditions which are necessary to make progress possible i.e. the history of social and academic events around the contextualization of the reception of Wüster's work as shown in chapter 1. In this regard, the results of our study suggest that three different elements in the reception of Wüster's work have interacted during the period from 1979 to 2009 on the growth of terminology. For instance, there is the obvious role of specialized knowledge that shapes international communication. There is also the evident importance of sociolinguistic needs, with the implicit norms and protocols attached to specific geographical, political and linguistic situations. Finally, we note the hugely influential impact of computational linguistics. The central role of computers in terminology research is reflected in the capacity to process language to solve linguistic, terminological, lexicological problems, faster and more accurately.

Historical and sociological events are also important and have contributed to the progress of specialized subject fields, to the increase of terminology research and to the promotion of new approaches to terminology. This progress can be explained with what

Lakatos (1978) calls "external history." It is confined to social and economic conjectures such as "to explain different speeds of development of different research programmes we may need to invoke external history" (Lakatos, 1978, p. 114). As a result, in modern terminology, there has been an integration of research findings from different disciplines such as information science, ontology, and computer science into terminology in conjunction with the growth of knowledge.

Moreover, with the new theoretical approaches to terminology, the discipline has gained knowledge by solving the problems it has encountered. In this sense, modern terminology has grown with certain intrinsic expectations from the earliest theory of terminology, which is characterized for the most part by a continual testing and revision. In terminology, the role of criticism in the growth of knowledge reveals itself most clearly, because the growth is justified in the sense of a theory that has survived tests. At this point, it is appropriate to state that knowledge in terminology has grown through criticism of earlier knowledge, at a slow speed and during the last thirty years. It is also true that terminology approaches have developed into an organized system called modern terminology. In general, to contribute to knowledge, researchers must revise the prior state of knowledge and build blocks of information to organize the structure of knowledge in the discipline. This method is mostly visible in gradual publication, as we have seen in chapters 2 and 4. The pieces of new information appear in journal articles, books and conferences proceedings, which taken in their appropriate significant context, are contributions to knowledge.

The context of criticism is relevant to our study because it is partly made explicit by the references to Wüster's publications, such as, his doctoral dissertation and his general theory of terminology, among others. By this means, researchers relate their own work to that of Wüster and to the other authors in the discipline. Consecutively, their ideas may be further studied, criticized, and cited in following publications. This network of criticism, commentaries and citations is of great importance to the growth of knowledge in terminology because by trying to relate individual research results to the central tenets of the discipline, researchers build a coherent body of knowledge that we interpret as a Lakatosian research programme. In the discipline of terminology, growth is not a matter of accumulating possible approaches to solve

certain terminological problems. The process involves a systematic procedure of criticism, correction, and improvement. Think about terminology researchers aiming to place their own work within the existing structure of knowledge: They must identify previous work on the topic in order to contribute to knowledge by bringing the different point of view into play.

In this view of the growth of knowledge in terminology there are several specific observations on the reception of Wüster's work that stand out. Our argument for reinforcing the revision of the present pluralistic network of terminology approaches can be further developed in the context of the role of criticism in the growth of the discipline. Our interpretation is not meant as an attack on all terminology approaches that bring criticism to Wüster's ideas. Our purpose has been to argue that new terminology approaches (1) identify fundamental problems that terminology faces, (2) contribute to the growth of terminology by revising the former traditional approach, and (3) specifically propose improvements of the discipline by providing the elements to structure the discipline as a research programme.

Although controversial, Wüster's work, the general theory of terminology, has left a lasting impression on terminology researchers. His ideas have been the subject of severe criticism, but their importance cannot be denied. His general view on terminology has structured contemporary understanding of terminology. Consequently, there is an increasing growth of terminology knowledge along with the production of new theoretical approaches. We must evaluate the growth of knowledge in terminology from quite an optimistic perspective.

5.3.3 Terminology as a Scientific Research Programme

Now it is time to portray terminology as a scientific research programme. As seen in chapter 3, five different theoretical approaches to terminology have emerged within the discipline to explain what terminology entails from different perspectives. In Lakatos' terms, these new propositions cannot be considered in isolation from their context in the practice of terminology but as components of a research programme. The importance of these terminology approaches with different degrees of guiding hypotheses is to shape the protective belt of the research programme.

Primarily, it is important to contextualize the emergence of the new theoretical approaches to terminology. The debate on the reception of Wüster's work began when critics express concern about the lack of an adequate theory of terminology. By suggesting that very few of the mainstream methodologies meet the criteria that traditionally define the systematic study of terminology, they feel that traditional theory is not supplying sufficient knowledge to explain current terminological needs. This situation may be explained as a theoretical and methodological mismatch between historical and desired contemporary conditions of terminology. It may be simply the case that the traditional theory of terminology is too general to properly represent the complexities of specific terminology explanations of today's needs. However, a philosophical evaluation of the growth of knowledge in terminology suggests that disciplines begin with general assumptions. Wüster gave considerable attention to the development of a methodology for shaping terminology research. He suggested that by applying systematic procedures, we would be able to make progress. At this point, it should be clear that Wüster's primary focus was on unambiguous international communication, both past and present. Perhaps the aspect of Wüster's ideas that most often is found disturbing for his critics is his emphasis on terminology standardization. In general, critics seem unable to get past this issue to look objectively at other features of Wüster's contribution to terminology. From the critics view, this limiting approach lead to the proposing of new theoretical approaches to terminology.

In what follows, we outline an alternative interpretation of the current debate in terminology based on positive and interpretive research. This interpretation provides a legitimate place for the criticisms and for the emergence of the new approaches to terminology. We show how these new terminology approaches are contributing to the development of terminology and are part of a terminology research programme. Our justification for a terminology research programme is based on criticism, which usually comes in the form of testing hypotheses or theories. Once a hypothesis, a theory or an approach is introduced, it becomes a competing theory. In terminology, it may be difficult to determine which theory or approach is better. Yet, from a positive point of view, progress in terminology has shown that criticism has played an important role in the development of more sophisticated research endeavors. For example, at present there is not just one approach to how to carry out

terminology work, but various competing approaches. Some new approaches imply drastic changes for the practice of terminology, at least for everyday terminology practice. Due to the different approaches, various methodologies and conceptualizations of terminology exist. If we look at the situation from an empirical point of view, up to now we do not have convincing empirical findings to demonstrate that one approach is better to explain what terminology as a whole entails nor it is our objective. Much more research is necessary to clarify and to assess the process of competing approaches that are to modify and elaborate new propositions within the terminology programme.

The consideration of the current state of terminology as a discipline, unlike the general theory of terminology, seems to lack a general unifying element. Even within the interdisciplinary theory proposed by Wüster, there are many different approaches to terminology work. The advantage of the scientific research programme is that it underlines the existing multidisciplinary character of terminology. In fact, the same terminology approaches may be seen as research programmes by themselves in their internal structure. In this respect, it is important to highlight that terminology approaches might be complementary and not antagonistic as Lakatos suggest.

Scientific practice is normally built around theories or hypotheses. Some practices are contrary to what the facts show, and yet they are not rejected. The concept of Lakatos' scientific research programme is an attempt to bring order to these practices which emerge as what could be the fundamental components of a discipline. Although the summary presented here may seem simplistic, we believe that these practical notes give a good picture of the current situation in terminology. Each scientific research programme consists of four basic elements that can be paired for a better understanding. The hard core (the basics of the programme) pairs with the negative heuristics (paths of research to avoid) and the protective belt (chain of theories and assumptions) with the positive heuristics (paths to pursue). The first part refers to the premises of the discipline and the second, to what can or cannot be done with the elements of the programme. If terminology is a Lakatosian research programme as we suggest, then it should be possible to identify its four elements.

We trace the beginning of terminology as a research programme back to the 1930s. During this period, the programme was formed with the first branch of research proposed by Wüster with the standardization of international terminology based on an onomasiological approach. The explosion of the programme in the present configuration began with the discussion and criticism to Wüster's ideas followed by the emergence of new theoretical approaches to terminology. Based on our data, a group of researchers began to take interest in a new field of study and propose a theory. This group began to spread the results of their research and encourage researchers to apply the theory. Then, from the 1990s, a new group of researchers began to apply the theory and evaluate its relevance for future research. After evaluating the relevance of mainstream terminology, new approaches materialized to form a research program.

As it seems understandable to see terminology as a research program, applying Lakatos' model to terminology may encompass a methodological difficulty. For example, it is difficult to identify the elements of the hard core in the programme within the variety of approaches that exist presently. However, it is helpful to remember that the hard core is the element that is always present and differentiates the programme from others. Chalmers (1999, p. 131) says that it is "the defining characteristic of the program." By its essentially polysemic definition, the hard core of terminology is characterized by three connotations. It can refer to the academic discipline that studies the concepts and terms used in specialized languages, to a set of theories and methodologies, and finally, to a set of terms, such as in the machine tool terminology compiled by Wüster in 1968 (see Table 15). This hard core of terminology is the main characteristic of the programme; it takes the form of some basic general theoretical hypotheses that form the basis from which the programme is to be developed. How does Wüster's work fit into this program? To overcome the problems facing international scientific and technical communication, Wüster proposed an interdisciplinary field of study with a theoretical methodology based on logics, ontology, information science, linguistics and other sciences. The research agenda that emerged from Wüster's general proposal generated an analytical response, which set the ground for the hard core of the programme and for future research.

"The research programme also has a 'heuristic', that is, a powerful problem-solving machinery, which, with the help of sophisticated mathematical techniques, digests anomalies and even turns them into positive evidence" (Lakatos, 1978, p. 4). In terminology, the negative heuristic refers to recommendations to the scientific community focussed on keeping the elements of the hard core. It states that falsifying a theory should not affect the elements of the hard core just mentioned. For any disagreement between facts and theory there may be a new assumption in which the elements of the hard core are kept unchanged. This is exactly what the new approaches to terminology have done so far. They have proposed new points of view about terminology but the main elements of the programme are stable.

The protective belt refers to the elements around the hard core that may be changed without substantially affecting the main characteristic of the programme. The protective belt of terminology is a flexible set of auxiliary hypotheses rearranged and readjusted as directed by the positive heuristic, i.e., a series of theories or approaches that share the same hard core as the program. Current terminology may not have a universal theory but a set of approaches with widely differing basic assumptions concerning terminology methodology. Clearly, such differing assumptions cannot form the basis for a coherent research programme but for a protective belt surrounding the hard core of the programme (see Lakatos, 1978, p. 4). New theoretical approaches are accommodated adapting the "protective belt" of auxiliary hypotheses to the new theoretical and methodological needs. That is why according to practical needs, this protective belt is expanded, customized and updated each time a new approach is needed. The belt works as a buffer in which the required adaptations are made (see Lakatos, 1978, pp. 48-50). The protective belt of terminology consists of terminology approaches, namely, socioterminology; sociocognitive terminology; communicative terminology; textual terminology, and cultural terminology.

Table 15. Terminology as a Scientific Research Programme

The hard core	The academic discipline that studies the concepts and terms used in specialized languages, a set of theories and methodologies, and finally, a set of terms, such as in the machine tool terminology.
The negative heuristics	The recommendations to the scientific community indicating to keep the elements of the hard core. New approaches have proposed new points of view about terminology but the main elements of the programme are stable**.**
The protective belt	Terminology approaches, namely, socioterminology; sociocognitive terminology; communicative terminology; textual terminology, and cultural terminology.
The positive heuristics	Articulated set of suggestions to approach terminology: • Linguistic view including a social and a cognitive perspective • Social and descriptive viewpoint taking into account terminology variation • Cognitive sciences concentrating on understanding the nature and development of specialized language • Methodological perspective to examining corpus of specialized texts in order to extract data for describing definitions, terms and concepts • Language planning position aiming to facilitate the acquisition of new knowledge and new technology

Given that two heuristics guide terminology researchers to situations in a developmental programme keeping the hard core intact, "the positive heuristic consists of a partially articulated set of suggestions or hints on how to change, develop the 'refutable variants' of the research programme, how to modify, sophisticate, the 'refutable' protective belt" (Lakatos, 1978, p. 50). As supported by Chalmers (1999, p. 135) the importance of the positive heuristic is emphasized in the programme because it determines the degree to which the programme is organized to guide future investigations; therefore new theories and approaches ensure some type of success in upcoming research (see Table 15).

Since modern terminology is composed of approaches that have developed a terminology programme, we may ask, how do new terminology approaches contribute to the program? What, exactly, is their contribution? Generally speaking, all approaches have struggled to advocate new paths for terminology research. For example, the heuristic of the communicative approach to terminology has offered a linguistic view including a social and a cognitive perspective (see Campo & Cormier, 2005). Socioterminology has proposed a social and descriptive viewpoint taking into account terminological variation; its methods are applied to the study of general language. The sociocognitive approach has suggested a perspective from the cognitive sciences concentrating on understanding the nature and development of specialized language. The textual approach has recommended a methodological perspective consisting of examining corpus of texts produced by experts in order to extract significant data for describing definitions, terms and concepts. Finally, the cultural approach has advised a language planning position aiming at facilitating the acquisition of new knowledge and new technology for people while maintaining their cultural heritage.

Through the suggestions generated by the approaches to terminology, the discipline has succeeded in clarifying guidelines for its future theoretical and empirical development. It has distinguished major problems and sketched pathways to their solution. Thus, it has directed researchers through a variety of methodological solutions by giving them directions to follow. As it is better explain in Lakatos' terms, "the positive heuristic sets out a programme which lists a chain of ever more complicated models simulating reality: the scientist's attention is riveted on building his models following instructions that are laid down in the positive part of his programme" (Lakatos, 1978, p. 50). At this time, it is important to note that the hard core and the positive heuristic represent the program; they comprise the criteria for identifying the program. In this sense, the development of a research programme can be represented as a sequence of successive changes, each of which arises from the pioneering ideas of Wüster by some theoretical modification performed in the protective belt.

As would be expected, there must be access to the structural levels of terminology as a research programme, that is, how researchers access terminology programme. The access is not complicated as "individual scientists or groups of scientists are open to modify or augment the

protective belt in any way they choose, provided these moves open up the opportunity for new tests and hence the possibility of novel discoveries" as Chalmers (1999, p. 136) pointed out. In this sense, our interpretation is similar to Myking's (2001b, pp. 55-56) 3-group classification. For example, Wüster's followers and critics fall into three categories. First, they agree with the main elements of the discipline, in which case the hard core of the programme is reinforced (Myking's moderate and "loyal"). Second, they offer differences within the program, but only at the level of positive heuristic or protective belt, which is easily modified to incorporate the new data without affecting the hard core (Myking's radical and "loyal"). Third, they provide facts that may affect the hard core of the program, to the degree of threating to change it to a different hard core (Myking's radical and "subversive"). If this group had ever existed, we would be experiencing different research programmes.

In brief, what do the new theoretical approaches mean for terminology? These different approaches in the growth of terminology should be acknowledged. Previously, Budin (2001) proposed a critical evaluation of state-of-the-art of terminology theory from the perspective of the philosophy of science. The importance of his study for our project lies in the idea of a construction of a "cluster of theories" in terminology, as Budin (2001, p. 20) suggested. His view is closely related to our proposal as this cluster of theories may be seen as a scientific research programme. Moreover, criticism should be recognized as a legitimate means to contribute to the growth of knowledge in terminology. This is how a significant amount of knowledge in the field of terminology has developed. Finally, recognition should be given to the fact that each approach is based on the theory and practice of terminology. With this in mind, has the debate on the reception of Wüster's work been solved? Perhaps not right away. Nevertheless, an indication on how the reception of Wüster's work needs to be reinterpreted in light of the growth of knowledge in terminology based on scientific research programmes has been offered. This is an avenue to confront the emergence of new theoretical approaches and therefore a more positive view of terminology than the one proposed by Toft and Picht (2001) with terminology at the crossroads.

5.3.4 Terminology: A Progressive Research Programme?

It now remains to demonstrate that terminology is a progressive research programme. For this purpose we take into account Lakatos' essential component for scientific progress, that is, the ongoing competition among research programmes. According to Lakatos (1978, pp. 33-34), a research programme may be progressive or degenerating. As previously mentioned, a programme is progressive when it is both theoretically and empirically progressive. If a programme is not progressive, then it is said to be degenerating. In Lakatos own words, "a research programme is said to be progressing as long as its theoretical growth anticipates its empirical growth, that is, as long as it keeps predicting novel facts with some success" (Lakatos, 1978, p. 112).

The methodology of scientific research programmes upon which we focus our attention is Lakatos' criterion for appraising scientific progress. The condition of progress requires that changes within a programme be at least theoretically progressive and that empirically progressive modifications be accomplished. In this sense, we are exploring a particular problem that terminology researchers face in trying to build a coherent body of knowledge. This problem of how knowledge grows provides a central question that underlies the development of terminology as a research programme where systematic criticism plays a crucial role. With the aim of appraising terminology as a research programme in Lakatosian terms, we have to start by placing modern terminology in its historical context, i.e. the social, economic and academic conditions that have marked the setting for terminology and have had an impact on its relevance. Advances in disciplinary and technological knowledge also reflect progress in terminology as the new approaches have benefited from the developments made in related disciplines as Wüster's once envisaged.

This is our interpretation. Eugen Wüster provided the first formal body of knowledge with the basic texts for the consolidation of modern terminology, followed by a period of exposition and then the debate around the reception of his work. Since his time, terminology has evolved in response to certain problem situations and has been shaped by the criticism of his terminological ideas. The change has been a continuing process which is not complex to understand in Lakatosian terms. Although the development implies extending the scope of the

programme to cover additional phenomena, to understand how terminology has improved, we should begin by trying to appreciate the contextual circumstances that gave rise to terminology, described in chapter 1. In effect, we should ask, what problems is terminology meant to solve? Depending on the response to this question, the problems we intend to solve are in part what we choose to look for. Explicitly, the appraisal of modern terminology as a research programme must address three basic issues.

First, there is a relationship between the elements of the hard core and the hypothesis of the protective belt. In modern terminology, each approach has attempted to subscribe to the elements of the hard core of the programme. Socioterminology explores terminology in its social context to analyze the usage, which theoretically implies placing terminology at a sociolinguistic level. The sociocognitive view focuses on a methodology for analyzing and describing concepts that are used within discourse communities. The communicative approach to terminology concentrates on terminological variation, harmonization, term usage in texts, and terminological application design. The textual approach to terminology analyses terms in corpus of scientific and technical texts (oral or written) to extract conceptual and terminological description. The cultural approach to terminology studies terminology to enrich Sango towards a cultural development in the African French-speaking world.

Second, there are empirical findings new terminology approaches account for. Theoretical approaches to terminology have emerged over the years and numerous explanatory works have been carried out with the aim of providing new methods for terminology work. The information gained by means of terminology research comes from many disciplines. "Examples include cognitive psychology, cognitive linguistics, theories on the evolution of languages, knowledge ordering (e.g. ontologies), classification and representation and the ever-increasing host of electronic tools for terminology research and management" (Antia et al., 2005, p. 4).

Third, certain empirical facts are predicted by the new approaches. Since the main indicator of the success of a research programme is the successful prediction of novel facts, we now go on to briefly present important novel facts in terminology. It is through continuous research that terminology approaches have unveiled novel facts. It has been shown that

terminology provides a more explicit understanding and description of specialized language with the introduction of new disciplines. In the beginning, it was thought that terminology was to standardize international terminology. Nowadays, it has found other applications such as facilitating the process of human-machine interaction, translation memory systems, artificial intelligence, ontologies and knowledge representation, automatic processing of multilingual terminology, to cite just a few in the field of technology. Research has also revealed novel facts about the development of national languages such as language planning in the case of French Africa and linguistic policies in some other regions.

Through interpretation of the issues above, we outline the procedure that terminology has used in its explanation of terminological data, and argue that it qualifies as a progressive research programme. Every approach to terminology is linked to the elements of the hard core. The empirical findings demonstrate, in a variety of new terminological settings, the possibilities that exist for innovative research. Terminology has made novel predictions in Lakatos' terms, demonstrating a clear trend towards interdisciplinary challenges. In this regard, the key aspect of the development of terminology is that its progress has been the result of a sequential internal growth in the programme. In other words, the protective belt, with a positive heuristic, generated the approaches to terminology meant for further theoretical and empirical progress.

We argue that as our understanding of terminology deepens, and as advances in science and technology develop, other terminological approaches may well be adapted to serve as a theoretical basis for conceiving a more sophisticated research program. In this sense, terminology is "theoretically progressive" because the theories or approaches to terminology, guided by the positive heuristic, have generated new theoretical content (see Table 5 in chapter 2) and have predicted new facts. In addition, "the Infoterm Symposia organized in 1975, 1981, 1991 and 1998 can be viewed as milestones in the development of the subject field" (Infoterm, 2004, p. 11). It is also "empirically progressive" because the practical and descriptive content generated by the new approaches is supported by observed facts, that is to say, the concrete terminological data analyzed in real communicative situations.

By examining modern terminology from a philosophical point of view, we briefly summarize and elaborate ways in which terminology can be considered a progressive research programme. The search for a satisfactory methodological explanation has help us answer the question of how terminology is done, how it should be done, how it has been done historically and why and by whom. Progress has occurred in terminology and has taken different forms, all of them having to do with its theoretical and empirical contents. It is progressive since as the theoretical approaches have developed, it has extended the scope and depth of its methodological groundwork.

To sum up, terminology is a progressive research programme. It certainly requires revision, extension and refinement. Despite the obvious and incontestable progress, which it has only been possible to outline here, only a small selection from the available body of knowledge that already exists has been made. Through the new terminology approaches, terminology is perfectly capable of guiding terminology researchers theoretically and empirically and must remain open to new approaches. "It must also be said that future developments are beset by a number of problems, to which no adequate solutions have as yet been proposed" (Picht, 1994/1995, p. 155). One essential issue that needs to be addressed is the formulation of a wrapping framework capable of accommodating the new approaches which have become known over the past 20 years in such a manner as to incorporate them into one complete theoretical structure. In this sense, we agree with Laudan (1977, p. 68) that progress is achieved within a discipline when a series of theories suggest increasing problem-solving techniques.

5.4   Conclusion

In this chapter, we have summarized and interpreted the findings of the reception of Wüster's work and the results of a corpus of 166 academic journal articles. The focus of this chapter has been to explain how the reception of Wüster's work has influenced the development of terminology as a discipline rather than on providing a comprehensive account of his reception. For this purpose, we used a theoretical model. We proposed that the reception of Wüster's work could be traced through reception theory and that the growth of terminology

as a discipline could be explained from the point of view of Lakatos' methodology of scientific research programmes. In this regard, the conclusion of this interpretative chapter falls into two sections.

From the point of view of reception theory, it is concluded that:

Although few generalizations can be made, the intensity with which terminology scholars in Europe and the Americas have rejected or accepted Wüster's work is best understood as the product of the horizon of expectations. The negative reception of Wüster's work is mostly conditioned by the horizon of expectations readers have in respect to his philosophy of language, ideas which failed to meet the needs of such readers. On the contrary, sharing a similar horizon of expectations as Wüster's would shape and dictate a positive reception. The irregular, fractional, and sometimes imprecise reception of Wüster's ideas can be explained by the fact that Wüster's readers looked to his contribution in the search for responses to problems that were specific for their own contexts. This means that Wüster's reception was above all instrumental in many cases. This fact can clarify why his ideas were adopted when they served certain interests, and why his ideas were rejected when they could not be adapted or used for specific purposes or particular linguistic situations.

The increase in the reception of Wüster's ideas and the rise of theoretical approaches to terminology coincide with a period of theoretical and practical advances in related disciplines such as linguistics, psychology, and computer science to name just a few. This is so because the descriptive structure of these disciplines and their theoretical and practical activities are somewhat different from the philosophical approach Wüster proposed. The 1980s represented a critical turning point in terminology as many authors found that Wüster's normative methodology did not apply to their descriptive needs. Nevertheless, within thirty years of Wüster's writings and publications, the impact of his work has been greater than his critics thought possible. This is an important indicator since it means that, over about thirty years, his ideas have been a constant manifestation in terminology research.

From the point of view of the methodology of scientific research programmes, it is concluded that:

Wüster's work definitely provided important groundwork for the development of terminology as a research programme. This interpretation yielded valuable insight on the topic of the growth of its knowledge since the interpretation served particularly to explain and recognize the emergence of a "cluster of theories" in Budin's terms (2001), namely, modern approaches to terminology. New theoretical approaches to terminology are needed to build the protective belt of terminology as a research programme. It follows that adaptations to new terminological needs inevitably require a redefinition of the relationship between traditional and modern methods through a series of methodological changes. Not only does the reception of Wüster's work perspective reflect these theoretical and empirical implications, it provides a suitably analytical stage for considering a progressive terminology programme.

As far as terminology research is concerned, the development of terminology as a discipline has essentially resided inside the discipline: "linguistics, logic, ontology, computer science and technical sciences" as Wüster (1974b) once envisaged. In this sense, terminology as a research programme is likely to expand greatly over the coming years. It is therefore important for further research to expand our knowledge of any potential theoretical and practical risks that might result from different pathways of experience.

The theoretical framework developed in this dissertation has important implications for both the practice and theory of terminology. This study provides terminology researchers a tool for evaluating the history of the discipline and offers a systematic means for determining the growth of knowledge in terminology. Perhaps the true reasons behind the controversial reception were multifaceted, but no one has attempted to explain the reception from a Lakatosian standpoint. Allowing for greater interaction between the approaches to terminology reduces the tendency to search for a superior theory able to explain all and every phenomena of terminology or to force an approach into a set of general hypotheses to account for terminology as a whole.

Finally, from the point of view of both reception theory and scientific research programmes, our findings led us to conclude that while the role of criticism varied as to

particular disciplines, the underlying assumption is that criticisms of Wüster's ideas have played a central role in the development of new theoretical approaches to terminology. On the one hand, lack of criticism to Wüster's work may have sounded pleasing, but it would indicate a certain lack of interest. On the other hand, negative criticism often approaches Wüster's ideas with doubt, sometimes equivalent to bias. One thing is clear: Criticism of Wüster's ideas has been often delivered by critics whose horizon of expectations has not been satisfied. At present, unfortunately, the name of Eugen Wüster has become a commonplace in terminology articles and conferences. He is mentioned too often, sometimes without any need. It is thought that negative criticism creates barriers and that is normally the case. It is also true that discussion and confrontation can pave the way for new and valuable propositions. However, constructive comments can be the most valuable for the growth of the discipline. They motivate researchers to make changes by analyzing limitations and exploring possibilities. In this sense, critics of Wüster's work can become problem solvers.

Conclusion

In this dissertation, we have examined the reception of Eugen Wüster's work in Europe and the Americas through bibliographies written in English, French or Spanish during the period from 1979 to 2009. In this final section, we not only give the main conclusions of this dissertation, but we focus briefly on its contribution to the existing knowledge in the field and on some topics for future research.

The study was designed to explore and analyze the reception of Eugen Wüster's work. This dissertation has basically proposed to answer the question: How has the reception of Eugen Wüster's work influenced the development of terminology as a discipline? The results of the study, specifically in the context of modern terminology, are conclusive on several vital questions concerning the state of development of terminology. The application of the concept of "horizon of expectations" from reception theory (Jauss, 1982) has proved to be an effective tool for understanding the reception of Wüster's work. In addition, the methodology of scientific research programmes (Lakatos, 1978) has allowed us to interpret the results and to explain the current state of development of terminology as a discipline.

In this conclusion, key findings are discussed first. This is followed by a discussion on the contribution to existing knowledge, in which findings related to the theoretical framework become the focus of argument. The conclusion then describes avenues for future research and related areas of investigation.

Summary of Findings and Conclusions

This study yielded a number of findings in relation to the general and the specific objectives it had set out. Major findings are summarized below.

Finding 1. Eugen Wüster was more than an electrical engineer.

In the study of the reception of Wüster's work, an adequate contextualization is an essential starting point for a proper appreciation of Wüster's contribution to the development of the discipline. Situating Wüster's work in place and time is necessary for understanding and to recognizing the implications and significance of his work. In Wüster's time and professional

context, two important features were present. First, there was the need to overcome difficulties in international technical communication, and second, there was the effort to standardize technical language. As a specialized practitioner of engineering, concerned with applying scientific knowledge and facilitating international communication among specialists, Wüster worked on several fronts of language planning that were difficult to isolate from his professional practice. In fact, the different areas in which Wüster worked are proof that he was much more than an electrical engineer in the field of terminology. His implication in linguistic matters reflects the complexity of his terminological practices which included working methods and principles for terminology with the aim of standardization, Esperanto studies, terminology standardization, information and library science, to mention just a few. It is in this context that Wüster's contribution should be appraised.

Finding 2. Eugen Wüster has been an important figure in modern terminology with an extensive and varied presence.

Eugen Wüster is recognized as an important figure at the foundation of modern terminology, as one of the pioneers of terminology standardization, and as the world's first author of a theory of terminology. His work had a revolutionary impact not only on linguistics, but on other disciplines such as ontology, computer science and information science. His own ideas about the implications of terminology standardization for language planning were often interpreted in a way that did not reflect his own intentions. However, the implications for the development of terminology remain as fundamental today as in his own time. Results have been revealing, especially with regard to the history of terminology, which is characterized by language barrier solutions, translation availability to scientists in all contexts, foundation and establishment of institutions such as, Infoterm, Termnet and ISO, the establishment of terminology programs for the dissemination of theory, methodology, and research activities around the world (see section 2.5.4). It is in this context that Wüster was, is, and will be relevant in modern terminology.

Finding 3. Negative reactions to Eugen Wüster's work materialized in new theoretical approaches to terminology.

Evolution in technology and science has brought considerable changes to life in general and to the study and practice of terminology specifically. Results have uncovered how the new theoretical approaches to terminology have coped with these advances and have identified new methods, methodologies, applications, and uses of terminology. Our study suggests that these approaches are articulated from the negative reactions to Wüster's endeavors in terminology as seen in chapter 3. Negative reactions to Wüster's work are associated with the lack of general applications of the general theory of terminology proposed by Wüster in 1979. Although new approaches are theoretically innovative, can be integrated and applied in terminology, and reaffirm the role of terminology research in the development of the discipline, none of them have gone beyond a comprehensive perspective of terminology. Each of them serves specific terminological needs in specific communicative contexts. The socioterminology approach, for example, detects and classifies linguistic variants of terms in different communicative situations while the socio-cognitive approach, in opposition to standardization aims, promotes a descriptive methodology for concept analysis that identifies the use of terminology in specific discourse communities.

Finding 4. The reception of Eugen Wüster's work has been more positive than negative.

Important unanticipated results were identified in the process of exploring Wüster's reception in 166 journal articles. Our findings confirmed our belief that Wüster's work has generated mixed reactions in Europe and the Americas. They also confirm that the reception has been more positive than negative. The positive reception was clear in 104 articles out of 166, and it was as significantly higher in English than in French and Spanish. Results indicate a strong interest in criticizing Wüster's ideas, yet there seems to be a lack of familiarity with his work. How can this be interpreted? Wüster's contribution to terminology has been mostly known by way of second-hand readings. It is therefore reasonable to assume that obstacles must exist to having access to some of his publications. Wüster is a well-known author by name, but has not been widely read. In this regard, we also found that very few of Wüster's

publications had been quoted and cited among the 500 publications reported by A. Lang, F. Lang and Reiter (1979) and Felber (1998). Indeed, in the 166 journal articles studied, he was directly quoted in just 24 articles.

Finding 5. The reception of Eugen Wüster's work has influenced the development of terminology as a scientific research programme in Lakatos terms.

This finding deals with the interpretive approach to the study of the reception of Wüster's work and demonstrates that the new theoretical approaches are intrinsically related to the development of terminology as a discipline. The interpretation of the findings was based on the methodology of scientific research programmes proposed by Lakatos (1978) and presented in chapter 5. This approach revealed new insights into the state-of-the-art of terminology. First, the new approaches to terminology form a cluster of theories around the hard core of the discipline creating a scientific research programme. Second, criticism, both positive and negative, played an important role for the growth of knowledge of terminology in Lakatosian terms.

The above discussion suggests that much of the motivation behind the disparate positions taken by terminology researchers derived from the nature of the scientific community itself. We found an explanation of this fact based on the concept of the horizon of expectations taken from reception theory. This means that a set of cultural norms, assumptions, and criteria shape the way in which readers understand and judge a work at a given time. In short, two major ideas accompanied the writing of this dissertation: The growing sense of the importance of Wüster's work for the emergence of the discipline, and the awareness that his texts are still unknown to his readers. We believe that a clear picture of what Wüster said in various writings is necessary so that individuals can decide for themselves whether or not his approach has value.

Overall, this dissertation gives a solid basis for judging the discussions and comments that abound regarding Wüster and his approach. Wüster and his work are mentioned not only in terminology textbooks, articles, and university courses but also in specialized academic congresses. A question that might be asked at this point is, if someone wants to learn what Wüster said, why not simply read his writings? A possible answer is, that would be great, but

Wüster's ideas appear in over 500 texts (see Felber, 1998) published mostly in German and Esperanto which means that it isn't easy to simply read his writings.

Contribution to Knowledge

Modern terminology has come a long way since its beginnings in the 1930s with the work of Eugen Wüster. There is still a vast amount of research to be done, and this dissertation aimed to contribute to the available knowledge. This study complements the ongoing debates discussing the relevance of Wüster's work and the development of terminology to which the reception of his work has given rise.

Based on the findings presented above, this dissertation makes a number of significant contributions to existing knowledge. This study results in a substantial support to the body of bibliography in the field, hopefully, by playing a part in research agendas on terminology and on the reception of Wüster's work, specifically. It provides the first empirical study demonstrating the influence of the reception of Wüster's work in the development of terminology. The most important inputs for the reception of Wüster's work are summarized in what follows.

- This dissertation has three significant strengths. It has exposed empirical data on the reception of Wüster's work. Additionally, it has shed light on contextualizing Wüster's work within a framework for a better understanding of his contribution to terminology. Finally, the study reveals the importance of Wüster's work for the development of terminology.

- This dissertation has introduced a new way of interpreting the current state of development of terminology by proposing an interpretation of terminology as a scientific research programme from a Lakatosian perspective. The result of this interpretation is the explanation of the development of terminology as a discipline.

- This dissertation has presented, for the first time and in the same place, a description of the five new theoretical approaches to terminology in a unique manner contributing to

the extension of knowledge in terminology by providing easy access to the theoretical ideas scholars in the field have proposed in the last 30 years.

- This dissertation has showed that the value of Wüster's contribution to modern terminology can only be appreciated by viewing it in his historical context. Wüster's contribution to terminology and specialized communication in general, must be judged from this perspective: His aim was not purely in linguistics. Therefore, Wüster's ideas, especially in its details can only be fully understood when one can capture his philosophical milieu, that is, his own conceptual framework.

Avenues for Future Research

In this section, specific recommendations for action in future research into the reception of Wüster's work are proposed. While this study has been successful in achieving the general objective and has produced interesting findings, it is recognized that there are some limitations that can be seen as having potential for future expansion of this work. In the light of these limitations, it is apparent that further research in needed. The results of this research have highlighted further terminology investigations that may aid in understanding the development of the discipline. This dissertation serves as an initial work from which future studies can benefit. The findings of this research study provide the following insights for future research.

- It is understood that findings from this study would not be generalizable to other corpus beyond the sample studied. Language constraints have inevitably limited the scope of this dissertation. An area recommended for further research would be to examine the reception of Wüster's work in a corpus of German bibliography. Results from this study would inform the terminology research community intending to understand and clarify the debate around Wüster's contribution to terminology.

- This study has focused on a particular corpus of documents from 166 academic journal articles from which to obtain the data needed for this study. The corpus size has the potential to be a limiting factor. However, a great deal of additional sources remains untapped for the period studied. It would be beneficial to study other corpus and collect additional data. By selecting documents from a larger heterogeneous corpus of

terminology bibliography we can create potential for differences in the reception. Further research is needed to develop a depth of understanding on the growth of the discipline. Further research into the state-of-the-art of terminology may contribute to the body of knowledge for evaluating the growth of terminology. Conclusions could be drawn from this work and used for a broader generalization.

- The study on the reception of Wüster's work we have presented can be seen on a daily basis in the academic environment. It is hoped that this study stimulates the minds of many terminologists and other language specialists to look more closely at the links between the reception of Wüster's work and the development of terminology as a discipline.

Concluding Remarks

The aim of this dissertation was to explore and analyze the reception of Wüster's work with the intention of explaining the development of terminology. To pursue this aim, a study was conducted by selecting a corpus of documents related to terminology. The data was analyzed and the results presented in this dissertation proved that the reception of Wüster's work had influenced the development of terminology. For this reason, the study is open to incorporate in the future other interpretations which could be of interest in solving the debate around the reception of Wüster's work.

This study suggests that the reception of Wüster's work can roughly categorize three periods of reception. The early account of Wüster's reception, discussed in chapter 2, implied no research commitment, only a desire to solve international communicative difficulties. This can be seen as the first period of reception. The attempt to verify the practicality of Wüster's contribution comprises a research commitment, but it did not imply the acceptance or rejection of the general theory of terminology. This testing period is referred as the second period. The third period can be characterized by working with the general theory and elaborating its effects. By the 1990s, the second period of reception found its most complete expression in the emergence of new theoretical approaches to terminology. The essential issue is the interpretation of new developments in terms of older research contributions. The choice of

research affects the interpretation, which may affect subsequent research in the field of terminology. One can argue that Wüster's work begins to enjoy a direct reception on the second and third periods, when it is adopted into one or more research studies, by experimental researchers who wish to explore its empirical consequences, or by theoreticians interested in elaborating its implications.

The fact that researchers adopted the general theory of terminology into their research on the structure of international communication by the early 1930s suggests that the key to the theory might lie in an assessment of just where the center of unambiguous communication was in Wüster's time. The explanation for this situation is that the 1930s were the zenith of standardized technical terminology. It immediately explains not only why the general theory of terminology moved to the center of specialized communication, but also why it might be less relevant today. Nowadays, terminology needs are different and require special tools for its research. Wüster's general theory of terminology suits standardization needs. This simple explanation of reception among Europeans and Americans (North and South) emphasizes the need for a multi-disciplinary approach to a general problem like the study of international scientific and technical terminology.

Overall, the results of this study produced a number of interesting findings that contribute to a better understanding of the reception of Wüster's work. At the broadest level, results seem to confirm that the development of terminology has been influenced by the reception of Wüster's contribution to terminology. In particular, this study has found that terminology has undergone substantial changes for a better theoretical and descriptive discipline.

Bibliography

Abbas, Y., & Picard, M.-L. (1998/1999). Exemple de pratique terminographique en entreprise. *Terminologies Nouvelles, 19*, 124-131.

Adelstein, A. (2000). Representación de unidades terminológicas: El modelo de término wusteriano. *Organon, 12*(26), 67-89.

Adelstein, A. (2005). Los modelos de texto en la teoría terminológica. In E. V. Acevedo de Bomba & M. Rivero de Lázaro (Eds.), *Desde y hacia el texto. Estudios de traducción y terminología* (pp. 84-94). San Miguel de Tucumán: CETRATER, Universidad Nacional de Tucumán.

Aito, E. (2000). Terminologie, dénomination et langues minoritaires face à la modernité: Vers une interrogation soucieuse du social. *Terminologies Nouvelles, 21*, 46-51.

Alexeeva, L. (2003). Interaction of terminology and philosophy. *Terminology Science & Research, 14*, 61-70. [Reprinted in Budin, G., Laurén, C., Picht, H., Pilke, N., Rogers, M., & Toft, B. (Eds.). (2006). *The theoretical foundations of terminology comparison between Eastern Europe and the Western countries. Proceedings of the Colloquium Comparison of the Theoretical Foundations of Terminology in Eastern Europe and the Western Countries* (pp. 9-19). Würzburg: Ergon Verlag].

Alpízar Castillo, R. (1990). *Traducción y terminología científica en Cuba. Estado actual y algunas perspectivas*. La Habana: Editorial Cientifico-Técnica.

Alpízar Castillo, R. (1996). Coup d'oeil sur la terminologie iberoaméricaine. *Terminómetro, 20*, 1-3.

Álvarez Catalá, S. (2005). El estado del arte de la terminología y la neología en Uruguay. Ponencias y trabajos Jornada realizada en Unión Latina, Montevideo, el 24 de junio de 2004. Retrieved from http://dtil.unilat.org/neologia/index.htm

Antia, B. (2000). *Terminology and language planning. An alternative framework of practice and discourse* (Vol. 2). Amsterdam/Philadelphia: John Benjamins.

Antia, B. (2001). Metadiscourse in terminology: Thesis, anti-thesis, synthesis. *Terminology Science & Research, 12*(1-2), 65-84.

Antia, B. (2002). Wüster and (applied) linguistics research. [Review of the book *Terminologie und Wissensordnung. Ausgewählte Schriften aus dem Gesamtwerk von Eugen Wüster* edited by Heribert Picht & Klaus-Dirk Schmitz]. *LSP & Professional Communication, 2*(1), 102-111. Retrieved from http://rauli.cbs.dk/index.php/LSP/article/viewFile/1948/1951

Antia, B. (2003). Agenda for fundamental research in terminology: Bridging the East-West divide. *Terminology Science & Research, 14*, 102-110. [Reprinted in Budin, G., Laurén, C., Picht, H., Pilke, N., Rogers, M., & Toft, B. (Eds.). (2006). *The theoretical foundations of terminology comparison between Eastern Europe and the Western countries. Proceedings of the Colloquium Comparison of the Theoretical Foundations of Terminology in Eastern Europe and the Western Countries* (pp. 59-68). Würzburg: Ergon Verlag].

Antia, B., Budin, G., Picht, H., Rogers, M., Schmitz, K.-D., & Wright, S. E. (2005). Shaping translation: A view from terminology research. *Meta, 50*(4). Retrieved from http://id.erudit.org/iderudit/019907ar

Antia, B., & Kamai, R. (2006). African issues in terminology: An educational perspective. In H. Picht (Ed.), *Modern approaches to terminological theories and applications* (Vol. 36, pp. 135-152). Bern: Peter Lang.

Arntz, R. (1981a). Terminology as a discipline in the training of translators and interpreters in language for special purposes. In M. Krommer-Benz (Ed.), *Theoretical and methodological problems of terminology. Proceedings of the International Symposium* (Vol. 6 Infoterm Series, pp. 524-530). München-New York-London-Paris: K.G. Saur.

Arntz, R. (1981b). [Review of the book *Terminologie als angewandte Sprachwissenschaft: Gedenkschrift für Univ.-Prof. Dr. Eugen Wüster* by Helmut Felber, Friedrich Lang, Gernot Wersig (Eds.)]. *International Classification, 8*(3), 168-169.

Arntz, R. (1985). [Review of the book *Introduction à la Terminologie* by Guy Rondeau]. *International Classification, 12*(1), 44-45.

Arntz, R. (1986). Réflexions méthodologiques sur l'harmonisation internationale des terminologies. In G. Rondeau & J. C. Sager (Eds.), *Termia 84: Terminologie et coopération internationale. Terminology and international cooperation. Proceedings of the International Conference on Terminology* (pp. 219-225). Loiusville: GIRSTERM, Université Laval.

Arntz, R., & Picht, H. (1995). *Introducción a la terminología* (A. d. Irazazábal, M. J. Jiménez, E. Schwartz & S. Yunquera, Trans.). Madrid: Fundación Germán Sánchez Ruipérez.

Auger, P. (1976). La terminologie: Une discipline linguistique du XXe siècle. In H. Dupuis (Ed.), *Essai de définition de la terminologie. Actes du colloque international de terminologie* (pp. 59-71). Québec: Régie de la Langue Française.

Auger, P. (1982). Commission de terminologie de l'Office de la langue française et la normalisation terminologique. In W. Nedobity (Ed.), *Terminologies for the eighties. With a special section: 10 years of Infoterm* (Vol. 7 Infoterm Series, pp. 227-238). München-New York-London- Paris: K.G.Saur.

Auger, P. (1988). La terminologie au Québec et dans le monde, de la naissance à la maturité. In Office de la Langue Française (Ed.), *L'ère nouvelle de la terminologie. Actes du sixième colloque OLF-STQ de terminologie* (pp. 27-59). Québec.

Auger, P. (1994). Genèse et développement de la terminologie dans le monde francophone: Une vision industrialisante de la langue. In P. Martel & J. Maurais (Eds.), *Langues et sociétés en contact* (pp. 121-133). Tübingen: Max Niemeyer Verlag.

Auger, P., & L'Homme, M.-C. (1994/1995). La terminologie selon une approche textuelle: Une représentation plus adéquate du lexique dans les langues de spécialité. *ALFA: Actes de Langue Française et de Linguistique / Symposium on French Language and Linguistics, 7/8*, 17-21.

Auger, P., & Rousseau, L.-J. (1978). *Méthodologie de la recherche terminologique*. Québec: Service de diffusion, Direction des relations publiques, Office de la langue française.

Aussenac-Gilles, N., & Condamines, A. (2007). Corpus et terminologie. In R. T. Pédauque (Ed.), *La redocumentarisation du monde* (pp. 131-147). Toulouse Cepadues Editions.

Bagge, C. (1983). Analyse sémantique comparative des structures des vocabulaires scientifiques anglais et français. *Meta, 28*(4), 391-399.

Barona, J. L. (2004). Hacer ciencia de la salud: Los diagnósticos y el conocimiento científico de las enfermedades. *Panace@, 5*(15), 37-44. Retrieved from http://medtrad.org/panacea/IndiceGeneral/n15_tribuna-Barona.pdf

Barrière, C. (2004). Building a concept hierarchy from corpus analysis. *Terminology, 10*(2), 241-263.

Bauer, L. (1985). A model for international co-operation in the field of energy: Standardization for the benefit of science and practice. In Infoterm (Ed.), *Terminologie und benachbarte Gebiete 1965-1985 = Terminology and related fields 1965-1985 = Terminologie et disciplines connexes 1965-1985* (pp. 128-134). Vienna: Hermann Böhlaus Nachf.

Bergenholtz, H., & Kaufmann, U. (1997). Terminography and lexicography. A critical survey of dictionaries from a single specialised field. *Hermes, 18*, 91-125.

Berteloot, P. (2008). La standardisation dans les actes législatifs de l'Union européenne et les bases de terminologie. In E. Chiocchetti & L. Voltmer (Eds.), *Normazione, armonizzazione e pianificazione linguistica. Normierung, Harmonisierung und Sprachplanung. Normalisation, harmonisation et planification linguistique* (pp. 13-20). Bolzano: LexALP.

Black, S. (2003). Imre Lakatos and literary tradition. *Philosophy and Literature, 27*(2), 363-381.

Blanke, D. (1998). Terminology science and planned languages. In E. Oeser & C. Galinski (Eds.), *Eugen Wüster (1898-1977): Leben und Werk - Ein österreichischer Pionier der Informationsgesellschaft. His life and work - An Austrian pioneer of the information society. Proceedings of the International Conference on Professional Communication and Knowledge Transfer* (Vol. 1, pp. 133-168). Vienna: TermNet.

Blanke, D. (2003a). Interlinguistics and Esperanto studies. Paths to the scholarly literature. *Language Problems & Language Planning, 28*(2), 155-192.

Blanke, D. (2003b). Terminology science and planned languages. *NB online - Departament of Planned Languages and Esperanto Museum - Terminology*. Retrieved from http://193.170.112.215/ev/collections/esperanto/wuester_eng.htm

Blanke, D. (2007). Interlinguistics. *The Language of Science*. Retrieved from http://www.polimetrica.eu/site/?p=86

Blanke, W. (1988). Terminologia Esperanto-Centro. Efforts for terminological standardization in the planned language. In D. Maxwell, K. Schubert & T. Witkam (Eds.), *New directions in machine translation. Conference Proceedings* (pp. 183-194). Dordrecht, Holland: Foris Publications.

Blanke, W. (1989). Terminological standardization: Its roots and fruits in planned languages. In K. Schubert (Ed.), *Interlinguistics. Aspects of the Science of Planned Languages* (Vol. 42, pp. 277-292). Berlin/New York: Mouton de Gruyte.

Blaug, M. (1975). Kuhn versus Lakatos, or paradigms versus research programmes in the history of economics. *HOPE, 7*(41), 399-433.

Boulanger, J.-C. (1991). Une lecture socio-culturelle de la terminologie. *Cahiers de Linguistique Sociale, 18*, 13-30.

Boulanger, J.-C. (1995). Présentation: Images et parcours de la socioterminologie. *Meta, 40*(2), 194-205.

Bourigault, D., & Slodzian, M. (1998/1999). Pour une terminologie textuelle. *Terminologies Nouvelles, 19*, 29-32.

Bouveret, M. (1998). Approche de la dénomination en langue spécialisée. *Meta, 43*(3), 1-18.

Bowker, L. (1994). Applied terminology: A state-of-the-art report. *Terminology, 1*(1), 181-192.

Bowker, L., & Pearson, J. (2002). *Working with specialized language: A practical guide to using corpora*. London/New York: Routledge.

Brøns, U. (1986). [Review of the book *Terminology: An introduction* by Heribert Picht & Jennifer Draskau]. *Terminologie et Traduction, 3*, 125-129.

Budin, G. (1997). Theoretical and operational problems of semiotic models in terminology theory. *Terminology Science & Research, 8*(1-2), 79-83.

Budin, G. (1998). The Wüster archive: A special node in a European digital archive network. In E. Oeser & C. Galinski (Eds.), *Eugen Wüster (1898-1977): Leben und Werk - Ein österreichischer Pionier der Informationsgesellschaft. His life and work - An Austrian pioneer of the information society. Proceedings of the International Conference on Professional Communication and Knowledge Transfer* (Vol. 1, pp. 169-173). Vienna, Austria: TermNet.

Budin, G. (2001). A critical evaluation of the state-of-the-art of terminology theory. *Terminology Science & Research, 12*(1-2), 7-23.

Budin, G. (2003). Prospects of a philosophy of terminology. *Terminology Science & Research, 14*, 71-80. [Reprinted in Budin, G., Laurén, C., Picht, H., Pilke, N., Rogers, M., & Toft, B. (Eds.). (2006). *The theoretical foundations of terminology comparison between Eastern Europe and the Western countries. Proceedings of the Colloquium Comparison of the Theoretical Foundations of Terminology in Eastern Europe and the Western Countries* (pp. 21-31). Würzburg: Ergon Verlag].

Budin, G. (2006). Terminology studies in the German-speaking communities. In H. Picht (Ed.), *Modern approaches to terminological theories and applications* (Vol. 36, pp. 91-106). Bern: Peter Lang.

Budin, G. (2007). L'apport de la philosophie autrichienne au développement de la théorie de la terminologie: Ontologie, théories de la connaissance et de l'objet (D. Candel & D. Savatovsky, Trans.). *Langages, 4*(168), 11-23.

Bühler, H. (1980). General theory of terminology and its practical applications. A university course for translators. *Fachsprache, 2*(2), 50-54.

Bühler, H. (1982a). The scientific legacy of Eugen Wüster (1898-1977). In W. Nedobity (Ed.), *Terminologies for the eighties. With a special section: 10 years of Infoterm* (Vol. 7 Infoterm Series, pp. 96-116). München-New York-London- Paris: K.G.Saur.

Bühler, H. (1982b). General theory of terminology and translation studies. *Meta, 27*(4), 425-431.

Bühler, H. (1998). The scientific legacy of Eugen Wüster revisited: Three major unfinished projects. In E. Oeser & C. Galinski (Eds.), *Eugen Wüster (1898-1977): Leben und Werk - Ein österreichischer Pionier der Informationsgesellschaft. His life and work - An Austrian pioneer of the information society. Proceedings of the International Conference on Professional Communication and Knowledge Transfer* (Vol. 1, pp. 187-205). Vienna, Austria: TermNet.

Bynon, T. (1966). Leo Weisgerber's four stages in linguistic analysis. *Man, New Series, 1*(4), 468-483.

Cabaret, J., & Denegri, G. (2008). The scientific research programmes of Lakatos and applications in parasitology. *Parasite, 15*, 501-505.

Cabré, M. T. (1991). Terminologie ou terminologies? Spécialité linguistique ou domaine interdisciplinaire? *Meta, 36*(1), 55-63.

Cabré, M. T. (1995). On diversity and terminology. *Terminology, 2*(1), 1-16.

Cabré, M. T. (1998). *La terminologie: Théorie, méthode et applications*. (Translated and adapted by M. C. Cormier & J. Humbley). Ottawa/Paris: Les Presses de l'Université d'Ottawa/Armand Colin.

Cabré, M. T. (1999a). *La terminología: Representación y comunicación. Elementos para una teoría de base comunicativa y otros artículos*. Barcelona: Institut Universitari de Lingüística Aplicada.

Cabré, M. T. (2000a). Terminologie et linguistique: La théorie des portes. *Terminologies Nouvelles, 21*, 10-15.

Cabré, M. T. (2000b). Elements for a theory of terminology: Towards an alternative paradigm. *Terminology, 6*(1), 35–57.

Cabré, M. T. (2001a). L'influence de l'Office de la langue française et du Québec sur la terminologie catalane. *Terminogramme, 101-102*, 131-148.

Cabré, M. T. (2001b). Consecuencias metodológicas de la propuesta teórica (I). In M. T. Cabré & J. Feliu (Eds.), *La terminología científico-técnica: Reconocimiento, análisis y extracción de información formal y semántica* (pp. 27-36). Barcelona: Institut Universitari de Lingüística Aplicada - Universitat Pompeu Fabra.

Cabré, M. T. (2002). Terminología y lingüística: La teoría de las puertas abiertas (Rosanna Folguerà Trans.). *Estudios de Lingüística Española (ELiEs), 16*. Retrieved from http://elies.rediris.es/elies16/Cabre.html

Cabré, M. T. (2003a). Theories of terminology: Their description, prescription and explanation. *Terminology, 9*(2), 163–199.

Cabré, M. T. (2003b). Terminology and philosophy: From logic to the philosophy of science. *Terminology Science & Research, 14*, 81-85. [Reprinted in Budin, G., Laurén, C., Picht, H., Pilke, N., Rogers, M., & Toft, B. (Eds.). (2006). *The theoretical foundations of terminology comparison between Eastern Europe and the Western countries. Proceedings of the Colloquium Comparison of the Theoretical Foundations of Terminology in Eastern Europe and the Western Countries* (pp. 33-37). Würzburg: Ergon Verlag].

Cabré, M. T. (2004). Estado actual de la investigación en terminología. In P. A. Fuertes Olivera (Ed.), *Lengua y sociedad: Aportaciones recientes en lingüística cognitiva, lenguas en contacto, lenguajes de especialidad y lingüística del corpus* (pp. 193-203). Valladolid: Universidad de Valladolid.

Cabré, M. T. (2007a). La terminologie, une discipline en évolution: Le passé, le présent et quelques éléments prospectifs (M.-C. L'Homme, Trans.). In M.-C. L'Homme & S. Vandaele (Eds.), *Lexicographie et terminologie: Comptabilité des modèles et des méthodes* (pp. 79-109). Ottawa: Presses de l'Université d'Ottawa.

Cabré, M. T. (2007b). *Organizar la terminología del español en su conjunto: ¿realidad o utopía?* Paper presented at the IV Congreso Internacional de la Lengua Española. Paneles y ponencias: Ciencia, técnica y diplomacia en español - Hacia la unidad terminológica del español, Cartegena-Colombia. http://www.congresosdelalengua.es/cartagena/ponencias/seccion_2/21/cabre_teresa.htm

Cabré, M. T. (2009). La teoría comunicativa de la terminología, una aproximación lingüística a los términos. *Revue Française de Linguistique Appliquée, 14*(2), 9-15. Retrieved from http://www.cairn.info/revue-francaise-de-linguistique-appliquee-2009-2-page-9.htm

Cabré, M. T. (Ed.). (1996). *Terminologia. Selecció de textos d'E. Wüster*. Barcelona: Universitat de Barcelona.

Cabré, M. T. (Ed.). (1999b). *Terminología y modelos culturales*. Barcelona: Institut Universitari de Lingüística Aplicada, Universitat Pompeu Fabra.

Cabré, M. T., & Estopá, R. (2002). El conocimiento especializado y sus unidades de representacion: Diversidad congnitiva. *Sendebar, 13*, 141-154.

Cabré, M. T., & Estopá, R. (2003). On the units of specialized meaning used in professional communication. *Terminology Science & Research, 14*, 15-27.

Cabré, M. T., Feliu, J., & Tebé, C. (2001). Bases cognitivas de la terminología: Hacia una visión comunicativa del concepto. *Sendebar 12*, 301-310.

Cabré, M. T., Freixa, J., Lorente, M., & Tebé, C. (1998). La terminología hoy: Replanteamiento o diversificación. *Organon, 12*(26), 33-41.

Campo, Á., & Cormier, M. (2005). The role of the communicative approach in the development of terminology. [CD ROM]. *Meta, 50*(4), 1-7.

Candel, D. (2004). Wüster par lui-même. *Cahiers du CIEL*, 15-31.

Candel, D. (2007). Terminologie de la terminologie. Métalangage et reformulation dans l'*Introduction à la terminologie générale et à la lexicographie terminologique* d'E. Wüster. *Langages, 4*(168), 66-81.

Candel, D., Samain, D., & Savatovsky, D. (Eds.). (in press). *Actes du Colloque international "Eugen Wüster et la terminologie de l'Ecole de Vienne" Paris, 3-4 février 2006. Dossiers d'HEL*.

Castro-Prieto, M. R., & Olvera-Lobo, M. D. (2007). Panorama intelectual de la terminología a través del análisis de redes sociales. *Meta, 52*(4), 816-838.

Célestin, T., Godbout, G., & Vachon-L'Heureux, P. (1984). *Méthodologie de la recherche terminologique ponctuelle: Essai de définition*. Montréal: Office de la langue française.

Cellerino, S. (1992). Considerations on the general theory of terminology. *The Interpreters' Newsletter, 4*, 59-61.

Chalmers, A. F. (1999). *What is this thing called science?* Maidenhead: Open University Press.

Chonez, A. (1959). [Review of the article "La normalisation du langage technique" by Eugen Wüster]. *Bulletin de Documentation Bibliographique, (2e partie Analyses d'ouvrages et d'articles français et étrangers préparées par la direction des bibliothèques de France)*, 486.

Cluver, A. D. d. V. (1980). The development of a terminological theory in South Africa. *International Journal of the Sociology of Language, 23*, 51-64.

Condamines, A. (1994). Terminologie et représentation des connaissances. *La Banque des Mots, 6*, 29-44.

Condamines, A. (1995). Terminology: New needs, new perspectives. *Terminology, 2*(2), 219-238.

Condamines, A. (2000). Les bases théoriques du groupe toulousain "Sémantique et Corpus": Ancrages et perspectives. *Cahiers de Grammaire, 25*, 5-28.

Condamines, A. (2005). Linguistique de corpus et terminologie. *Langages, 39*(157), 36-47.

Condamines, A. (2007). L'interprétation en sémantique de corpus: Le cas de la construction de terminologies. *Revue Française de Linguistique Appliquée, 1*(21), 39-52. Retrieved from http://www.cairn.info/article.php?ID_REVUE=RFLA&ID_NUMPUBLIE=RFLA_121 &ID_ARTICLE=RFLA_121_0039

Condamines, A. (2008). Peut-on prévenir le risque langagier dans la communication écrite? *Langage et Société, 3*(125), 77-97. Retrieved from http://www.cairn.info/article.php?ID_REVUE=LS&ID_NUMPUBLIE=LS_125&ID_A RTICLE=LS_125_0077

Condamines, A., & Péry-Woodley, M.-P. (2007). Linguistic markers of lexical and textual relations in technical documents. *Studies in Writing, 21*, 3-16.

Corbeil, J.-C. (2007a). Le rôle de la terminologie en aménagement linguistique: Genèse et description de l'approche québécoise. *Langages, 4*(168), 92-105.

Corbeil, J.-C. (2007b). *L'embarras des langues. Origine, conception et évolution de la politique linguistique*. Montréal: Québec Amérique.

Cormier, M. C., & Lethuillier, J. (Eds.). (1991). *La terminologie dans le monde: Orientations et recherches [Special Issue]. Meta, 36(1)*. Ottawa: Les Presses de l'Université d'Ottawa.

Cortès, C. (Ed.). (2004). *Cahiers du CIEL. Des fondements théoriques de la terminologie*. Paris: Université Paris 7 Denis Diderot/Université du Littoral - Côte d'Opale.

Craw, R. C., & Weston, P. (1984). Panbiogeography: A progressive research program? *Systematic Zoology, 33*(1), 1-13.

Criado de Val, M. (1982). HISPANOTERM: Finalidad, urgencia y ordenación terminológica del español. In J. R. Richart, G. Thome & W. Wilss (Eds.), *Fachsprachenforschung und -lehre: Schwerpunkt Spanisch* (pp. 65-70). Tübingen: Gunter Narr Verlag.

Dahlberg, I. (1985). [Review of the book *Terminology Manual* by Helmut Felber]. *International Classification, 12*(1), 45-46.

Delisle, J. (2008). *La terminologie au Canada: Histoire d'une profession*. Montréal: Linguatech.

Desmet, I. (2002). L'analyse du sens en terminologie: Théorie et pratique de la définition terminologique. *TradTerm, 8*, 149-168.

Desmet, I. (2007). Terminologie, culture et société. Éléments pour une théorie variationniste de la terminologie et des langues de spécialité. *Cahiers du Rifal, 26*, 3-13.

Desmet, I., & Boutayeb, S. (1993). Terme et mot: Propositions pour la terminologie. *La Banque des Mots, 5*, 5-32.

Desmet, I., & Boutayeb, S. (1994). Terms and words: Propositions for terminology. *Terminology, 1*(2), 303-325.

Díaz Rojo, J. A. (2001). La terminología médica: Diversidad, norma y uso. *Panace@, 2*(4), 40-46. Retrieved from http://www.medtrad.org/panacea/IndiceGeneral/n4_TerminologiaMedica.pdf

Diki-Kidiri, M. (1999a). La diversité dans l'observation de la réalité. In M. T. Cabré (Ed.), *Terminología y modelos culturales* (pp. 61-66). Barcelona: Institut Universitari de Lingüística Aplicada, Universitat Pompeu Fabra.

Diki-Kidiri, M. (1999b). Terminologie pour le développement. In M. T. Cabré (Ed.), *Terminología y modelos culturales* (pp. 67-74). Barcelona: Institut Universitari de Lingüística Aplicada, Universitat Pompeu Fabra.

Diki-Kidiri, M. (2000a). Terminologie et diversité culturelle. *Terminologies Nouvelles, 21*, 5-6.

Diki-Kidiri, M. (2000b). Une approche culturelle de la terminologie. *Terminologies Nouvelles, 21*, 27-30.

Diki-Kidiri, M. (2001). Méthodologie pour une terminologie à base culturelle. In A. Clas, H. Awaiss & J. Hardane (Eds.), *Actualité Scientifique. L'éloge de la différence: La voix de l'autre. Actes des VIe Journées scientifiques du Réseau thématique Lexicologie, Terminologie, Traduction* (pp. 323-328). Beyrouth: Universités francophones.

Diki-Kidiri, M. (2002). La terminología cultural fundamento de una verdadera localización (Beatriz E. Hoyos M.; Jenny Wolff P.; María Cecilia Plested A. Trans.). *La terminología, entre la globalización y la localización. Actas del VIII Simposio Iberoamericano de Terminología*. Retrieved from http://www.riterm.net/actes/8simposio/marcelDikikidiri.htm#a

Diki-Kidiri, M. (2007). Éléments de terminologie culturelle. *Cahiers du Rifal, 26*, 14-25.

Diki-Kidiri, M. (2008a). *Le vocabulaire scientifique dans les langues africaines: Pour une approche culturelle de la terminologie*. Paris: Karthala.

Diki-Kidiri, M. (2008b). La terminologie culturelle: Points de repère. In H. Tourneux (Ed.), *Langues, cultures et développement en Afrique* (pp. 117-134). Paris: Karthala.

Diki-Kidiri, M. (2008c). Un terminologie pour le développement. In M. Diki-Kidiri (Ed.), *Le vocabulaire scientifique dans les langues africaines: Pour une approche culturelle de la terminologie* (pp. 15-19). Paris: Karthala.

Diki-Kidiri, M. (2008d). Terminologie africaine et mondialisation. In M. Diki-Kidiri (Ed.), *Le vocabulaire scientifique dans les langues africaines: Pour une approche culturelle de la terminologie* (pp. 277-284). Paris: Karthala.

Draskau, J. (1991). Some reflections on "Equivalence"/"Äquivalenz" as a term and a concept in the theory of translation. *Meta, 36*(1), 269-274.

Draskau, J. K., & TermNet (Eds.). (1993). *Selected readings in Russian terminology research* (Vol. 3, IITF Series). Vienna: TermNet.

Dressino, V., & Denegri, G. (1996). La metodología de los programas de investigación científica y el concepto biológico de sistema conservativo. *Revista de Filosofía y Teoría Política, 31-32*, 131-137.

Drozd, L., & Roudny, M. (1980). Language planning and standardization of terminology in Czechoslovakia. *International Journal of the Sociology of Language, 23*, 29-41.

Dubuc, R. (1978). *Manuel pratique de terminologie* (1rst ed.). Montréal/Paris: Linguatech/Conseil international de la langue française.

Dupuis, H. (Ed.). (1976). *Essai de définition de la terminologie. Actes du Colloque International de Terminologie*. Québec: Régie de la Langue Française.

Duquet Picard, D. (1984). La normalisation terminologique: Un outil à parfaire. *Travaux de Terminologie, 4*, 127-149.

Duquet Picard, D. (1985). Norme et recommandations de l'ISO en matière de lexicographie terminologique. In J. B. Beaudoin & [et al.] (Eds.), *Problèmes et méthodes de la lexicographie terminologique. Actes du colloque, Université du Québec à Montréal, 8, 9 et 10 avril 1983* (pp. 185-195). Québec: Université du Québec au Montréal.

Dury, P. (2005). Terminology and specialized translation: The relevance of the diachronic approach. *LSP & Professional Communication 5*(1), 31-41. Retrieved from http://rauli.cbs.dk/index.php/LSP/article/viewFile/2042/2042

Dury, P., & Picton, A. (2009). Terminologie et diachronie: Vers une réconciliation théorique et méthodologique? *Revue Française de Linguistique Appliquée, 14*(2), 31-41. Retrieved from http://www.cairn.info/revue-francaise-de-linguistique-appliquee-2009-2-page-31.htm

Egler, F. B. (1956). [Review of the book *A Bibliography of Monolingual Scientific and Technical Glossaries. (Vol.I National Standards)* by Eugen Wüster]. *Ecology, 37*(2), 406.

Eisenwort, W. (1982). Remarks on certain foundational problems of a general theory of terminology. In I. Dahlberg (Ed.), *Universal classification I: Subject analysis and ordering systems. Proceedings of the 4th International Study Conference on Classification Research, 6th Annual Conference of Gesellschaft für Klassifikation* (Vol. 1, pp. 102-105). Frankfurt: INDEKS Verlag.

Ellis, W. P. (1988). Management of Technical Terminology in Standards Organizations. In R. A. Strehlow (Ed.), *Standardization of technical terminology principles and practices* (Vol. 2, pp. 62-70). Philadelphia: ASTM.

Faulstich, E. (1996). Spécificités linguistiques de la lexicologie et de la terminologie. Nature épistémologique. *Meta, 41*(2), 237-246.

Fedor de Diego, A. (1995). *Terminología: Teoría y práctica*. Caracas: Equinoccio Ediciones de la Universidad Simón Bolivar.

Fedor de Diego, A. (2000). Terminología en universidades latinoamericanas. Retrieved November 9, 2006, from http://www.termilat.info/env678.htm

Fedor de Diego, A., & Boroni de Sánchez-Vegas, M. (Eds.). (1984). *Actas del Primer Seminario Nacional de Terminología*. Caracas: Impresos de la USB.

Fedor de Diego, A., & Boroni de Sánchez-Vegas, M. (Eds.). (1988). *Actas del Primer Simposio Latinoamericano de Terminología.* Caracas: Grupo de Investigación Terminológica del Departamento de Idiomas de la USB.

Felber, H. (1973). Eugen Wüster - A pioneer in terminology (M. Benz-Bisco Trans.). *Babel, 19*(4), 182-185.

Felber, H. (1974a). An outline of international terminological activities. *International Classification, 1*(2), 89-91.

Felber, H. (1974b). *Terminological work and standardization of terminology.* (SHC-74/CONF.609/8). Valescure: UNESCO.

Felber, H. (1976). Developing international co-operation in terminology and terminological lexicography *International co-operation in terminology. Proceedings of the first Infoterm Symposium* (Vol. 3 Infoterm Series, pp. 281-296). München: Verlag Dokumentation.

Felber, H. (1977). In memoriam Eugen Wüster. *Lebende Sprachen, 3*(22), 141-142.

Felber, H. (1978a). International efforts to overcome difficulties in technical communication. In Commission of the European Communities (Ed.), *Overcoming the language barrier. Proceedings of the Third European Congress on Information Systems and Networks* (2 ed., Vol. 1, pp. 86-97). München: Verlag Dokumentation; K.G.Saur.

Felber, H. (1978b). Infoterm News. Terminology and terminological lexicography. *International Classification, 5*(1), 41-42.

Felber, H. (1980a). In memory of Eugen Wüster, founder of the general theory of terminology. *International Journal of the Sociology of Language, 23*, 7-14.

Felber, H. (1980b). International standardization of terminology: Theoretical and methodological aspects. *International Journal of the Sociology of Language, 23*, 65-79.

Felber, H. (1980c). Infoterm and TermNet. Plans, activities, achievements. *International Classification, 7*(3), 140-145.

Felber, H. (1980d). A plan for data management within TermNet. In C. Galinski (Ed.), *Terminological data banks. Proceedings of the First International Conference* (Vol. Vol. 5 Infoterm Series, pp. 190-196). München: K.G. Saur.

Felber, H. (1981). The Vienna school of terminology fundamentals and its theory. In M. Krommer-Benz (Ed.), *Theoretical and Methodological Problems of Terminology. Proceedings of the International Symposium* (Vol. 6 Infoterm Series, pp. 69-86). München-New York-London-Paris: K-G Saur.

Felber, H. (1982a). The terminological data elements as derived from the general theory of terminology and their recording in machine-readable form. In W. Nedobity (Ed.), *Terminologies for the eighties. With a Special Section: 10 Years of Infoterm* (Vol. 7 Infoterm Series, pp. 322-366). München-New York-London- Paris: K.G.Saur.

Felber, H. (1982b). The general theory of terminology and of terminography. Anticipated developments in the eighties. In W. Nedobity (Ed.), *Terminologies for the eighties. With a special section: 10 years of Infoterm* (Vol. 7 Infoterm Series, pp. 119-136). München-New York-London- Paris: K.G.Saur.

Felber, H. (1983a). Basic principles and methods for the preparation of terminology. In C. G. Interrante & F. J. Heymann (Eds.), *Standardization of technical terminology: Principles and practices* (pp. 3-14). Philadelphia: ASTM.

Felber, H. (1983b). The international activities of Infoterm and the TermNet programs. In C. G. Interrante & F. J. Heymann (Eds.), *Standardization of technical terminology: Principles and practices* (pp. 46-55). Philadelphia: ASTM.

Felber, H. (1983c). The general theory of terminology - A theoretical basis for information. *Cahiers de la documentation, 37*(2/3), 85-91.

Felber, H. (1984). *Terminology manual*. Paris: UNESCO and Infoterm.

Felber, H. (1987). *Manuel de terminologie*. Paris: UNESCO et Infoterm.

Felber, H. (1994). East-West cooperation in international terminology work in the 1930's: Drezen and Wüster. In J. K. Draskau & H. Picht (Eds.), *Proceedings of the International Conference on Terminology Science and Terminology Planning and the International IITF-Workshop Theoretical Issues of Terminology Science* (Vol. 4, IITF Series, pp. 40-48). Vienna: TermNet.

Felber, H. (1998). Eine erweiterte Wüster-Bibliographie: 1931-1977. In E. Oeser & C. Galinski (Eds.), *Eugen Wüster (1898-1977): Leben und Werk - Ein österreichischer Pionier der Informationsgesellschaft. His life and work - An Austrian pioneer of the information society. Proceedings of the International Conference on Professional Communication and Knowledge Transfer* (pp. 235-323). Vienna: TermNet.

Felber, H. (1999). La relación entre objeto concepto y símbolo. (J. J. Giraldo, Trans.). *Revista Interamericana de Bibliotecología, 22*(1), 11-20.

Felber, H., & Budin, G. (1989). *Terminologie in theorie und praxis*. Tübingen: G. Narr.

Felber, H., Galinski, C., Hofstädler, H., Nebodity, W., & Schöndorfer, U. (1986). Preparation of the terminological data contained in E. Wüster's dictionary "The Machine Tool" for input into EURODICAUTOM. *Terminologie et Traduction, 3*, 29-43.

Felber, H., Galinski, C., & Nedobity, W. (1982). Ten years of Infoterm. A Report on Activities and Achievements. In W. Nedobity (Ed.), *Terminologies for the eighties. With a Special Section: 10 Years of Infoterm* (Vol. 7 Infoterm Series, pp. 19-95). München-New York-London- Paris: K.G.Saur.

Felber, H., Lang, F., & Wersig, G. (Eds.). (1979). *Terminologie als angewandte Sprachwissenschaft: Gedenkschrift für Univ.-Prof. Dr. Eugen Wüster*. München/New York/ London/ Paris: K.G. Saur.

Felber, H., Manu, A., & Nedobity, W. (1987). Standardized vocabularies: preparation ─ structure ─ function. *Terminologie et Traduction, 1*, 49-102.

Felber, H., & Picht, H. (1984). *Métodos de terminografía y principios de investigación terminológica*. Madrid: Instituto Miguel de Cervantes.

Ferrari, L. (2002). ¿Un caso de polisemia en el discurso jurídico? *Terminology, 8*(2), 221-244.

Freixa, J., Fernández Silva, S., & Cabré, M. T. (2008). La multiplicité des chemins dénominatifs. *Meta, 53*(4), 731-747.

Gabrielatos, C., & Sarmento, S. (2006). Central modals in an aviation corpus: Frequency and distribution. *Letras de Hoje, 41*(2), 215-240.

Gajdos, M., & Felber, H. (1998). 100th Anniversary Eugen Wüster. *Terminology Standardization and Harmonization, 10*(1-4), 4-10.

Galinski, C. (1982). Ten years of Infoterm - activities and achievements. *Journal of Information Science, 5*, 103-114.

Galinski, C. (1988). Situation et taches de la terminographie a l'usage des traducteurs. *La Banque des Mots*(Special issue), 31-40.

Galinski, C. (1996). La figura d'E. Wüster. In M. T. Cabré (Ed.), *Terminologia. Selecció de textos d'E. Wüster* (pp. 11-15). Barcelona: Universitat de Barcelona. Servei de Llengua Catalana.

Galinski, C. (1998). The global group: Infoterm, TermNet, ISO/TC37, GTW, IITF. In A. Munteanu (Ed.), *Terminology work and knowledge transfer. Best practice in terminology management and terminography. Proceedings of the 4th Infoterm International Conference on Professional Communication and Knowledge Transfer* (Vol. 2, pp. 43-52). Vienna: TermNet.

Galinski, C. (1999). International information centre for terminology - Infoterm - International co-operation in terminology. In L. Hoffmann, H. Kalverkämper & H. E. Wiegand (Eds.), *Fachsprachen: Ein internationales Handbuch zur Fachsprachenforschung und Terminologiewissenschaft / Languages for special purposes: An international handbook of special-language and terminology research* (Vol. 2, pp. 2245-2254). Berlin/New York: Walter de Gruyter.

Galinski, C. (2003). International terminology associations and standardization - Infoterm, TermNet, ISO/TC 37. *LSP & Professional Communication, 3*(2), 111-118. Retrieved from http://rauli.cbs.dk/index.php/LSP/article/viewFile/2005/2005

Galinski, C. (2009). History of ISO/TC 37 and Infoterm. *eDITion, 2*, 19-23.

Galinski, C., & Hjulstad, H. (1998). ISO/TC37 "Terminology (principles and coordination)" International standardization of terminological principles and methods. In A. Munteanu (Ed.), *Terminology work and knowledge transfer. Best practice in terminology management and terminography. Proceedings of the 4th Infoterm International Conference on Professional Communication and Knowledge Transfer* (Vol. 2, pp. 91-103). Vienna: TermNet.

Galinski, C., & Nedobity, W. (1988). Special languages, terminology planning and standardization. In R. A. Strehlow (Ed.), *Standardization of technical terminology: Principles and practices* (Vol. 2, pp. 4-13). Philadelphia: ASTM.

Galinski, C., & Picht, H. (1997). Graphic and other semiotic forms of knowledge representation in terminology management. In S. E. Wright & G. Budin (Eds.), *Handbook of terminology management* (Vol. 1, pp. 42-61). Amsterdam/Philadelphia: John Benjamins.

Gambier, Y. (1987). Problèmes terminologiques des "Pluies acides": Pour une socio-terminologie. *Meta, 32*(3), 314-320.

Gambier, Y. (1991a). Présupposés de la terminologie: Vers une remise en cause. *Cahiers de Linguistique Sociale, 18*, 31-58.

Gambier, Y. (1991b). Travail et vocabulaire spécialisés: Prolégomènes à une socio-terminologie. *Meta, 36*(1), 8-15.

Gambier, Y. (1994). Vers une histoire sociale de la terminologie. In M. Snell-Hornby, F. Pöchhacker & K. Kaindl (Eds.), *Translation studies: An interdiscipline* (pp. 255-266). Amsterdam/Philadelphia: John Benjamins.

Gambier, Y. (2001). Socioterminologie: Une terminologie remise sur ses pieds. *Terminogramme, 101-102*, 107-118.

Gaudin, F. (1990). Socioterminology and expert discourses. In H. Czap & W. Nedobity (Eds.), *TKE'90: Terminology and Knowledge Engineering. Proceedings of the Second International Congress* (Vol. 2, pp. 631-641). Frankfurt Main: Indeks Verlag.

Gaudin, F. (1993a). Socioterminologie: Propos et propositions épistémologiques. *Le Langage et l'Homme, 28*(4), 247-257.

Gaudin, F. (1993b). *Socioterminologie: Des problèmes sémantiques aux pratiques institutionnelles*. Rouen: Publications de l'Université de Rouen.

Gaudin, F. (1993c). Socioterminologie: Du signe au sens, construction d'un champ. *Meta 38*(2), 293-301.

Gaudin, F. (2003). *Socioterminologie: Une approche sociolinguistique de la terminologie*. Bruxelles: De Boeck & Larcier.

Gaudin, F., & (Ed.). (1995). Usages sociaux des termes: Théories et terrains [Special issue]. *Meta, 40*(2).

Geentjens, S., Temmerman, R., Kerremans, K., & De Baer, P. (2006). Sociocognitive terminology and termontography. *Proceedings of the Journées d'Etudes sur le Traitement Automatique de la Langue Arabe*, 138-151. Retrieved from http://cvc.ehb.be/pub/JETALA2006_SKRP.pdf

Gianelli de Blasco, S. (1995). Informe del grupo de terminología de Uruguay - URUTERM. In Unión Latina (Ed.), *Terminología y desarrollo. Actas del IV Simposio Iberoamericano de Terminología RITerm* (pp. 179-186). Buenos Aires: Unión Latina.

GIRSTERM (Ed.). (1976). *Proceedings of the Canadian symposium on general guiding principles for the harmonization of terminological research, documentation and standardization*. Ottawa: Translation Bureau of the Government of Canada, Secretary of State.

Glass, B. (1957). [Review of the book *A Bibliography of Monolingual Scientific and Technical Glossaries. (Vol.I National Standards)* by Eugen Wüster]. *The Quarterly Review of Biology, 32*(4), 447.

Goffin, R. (1997). Eurodicautom: La banque de données terminologiques de la commission européenne (1973-1996). *Terminologie et Traduction, 2*, 29-73.

Gómez González-Jover, A. (2006). Meaning and anisomorphism in modern lexicography. *Terminology, 12*(2), 215-234.

Gouadec, D. (1990). *Terminologie. Constitution des données*. Paris: Afnor.

Grinsted, A. (1997). The European Association for Terminology. *Terminologie et Traduction, 2*, 117-123.

Gross, G., & Mathieu-Colas, M. (2001). Description de la langue de la médecine. *Meta, 46*(1), 68-81.

Guerrero Ramos, G., & Pérez Lagos, M. F. (Eds.). (2002). *Panorama actual de la terminología* (Vol. 30: Interlingua). Granada: Comares.

Guespin, L. (1991). La circulation terminologique et les rapports entre science, technique et production. *Cahiers de Linguistique Sociale, 18*, 59-79 [Reprinted in Meta, 1995, 1940(1992), 1206-1215].

Guespin, L. (1993). Normaliser or standardiser? *Le Langage et l'Homme, 28*(4), 213-222.

Guespin, L. (1995). La circulation terminologique et les rapports entre science, technique et production. *Meta, 40*(2), 206-215.

Hajičová, E., Kotěšovcová, A., & Mírovský, J. (Eds.). (2003). *Proceedings of the XVII International Congress of Linguists , CD-ROM*. Prague: Matfyzpress, MFF UK.

Hamel, G. A. (1964). *Network of regional and national scientific translations centres. Centres for special subject or languages*. (UNESCO/NS/Doc/WP 3.3, 4 p). Paris: UNESCO.

Heid, U., & Freibott, G. (1991). Collocations dans une base de données terminologique et lexicale. *Meta, 36*(1), 77-90.

Hjørland, B. (2007). Notes to Temmerman (1997, 2000). Retrieved July 10, 2008, from http://www.db.dk/bh/lifeboat_ko/CONCEPTS/temmrrman_1997.htm

Holmstrom, J. E. (1949). *Interlingual scientific and technical dictionaries (A report)*. (UNESCO/NS/SL/1, 65 p). Paris: UNESCO.

Holmstrom, J. E. (1950). *Proposals for UNESCO to sponsor the production of special dictionaries*. (UNESCO/NS/SL/2, 11 p). Paris: UNESCO.

Holmstrom, J. E. (1951a). *Interlingual scientific and technical dictionaries*. (WS/011.160, 2 p). Paris: UNESCO.

Holmstrom, J. E. (1951b). *Progress to date in the UNESCO programme for scientific terminology and dictionaries*. (Ref. 66Q/1X29, 9 p). Paris: UNESCO.

Holmstrom, J. E. (1952). *Principles and working procedure in technical translating*. (WS/052.64, 5p). Paris: UNESCO.

Holmstrom, J. E. (1959). *The planning of UNESCO policy regarding terminology and translating*. (UNESCO/LBA/Conf.21/6 bis (NS/1158), 5 p). Paris: UNESCO.

Holub, R. C. (1984). *Reception theory: A critical introduction*. London - New York: Methuen.

Holzem, M. (1999). *Terminologie et documentation: Pour une meilleure circulation des savoirs*. Paris: ADBS.

Humbley, J. (1989a). Terminologie et conscience linguistique. *La Banque des Mots* (Special issue), 97-104.

Humbley, J. (1989b). [Review of the book *Terminologie in theorie und praxis* by Helmut Felber & Gerhard Budin]. *La Banque des Mots* (Special issue), 130-135.

Humbley, J. (1993). L'activité terminologique en France: Le Centre de Terminologie et de Néologie. In D. Gouadec (Ed.), *Terminologie et terminotique: Outils, modèles et méthodes. Actes de la Première Université d'Automne en Terminologie* (pp. 93-96). Paris: La maison du dictionnaire.

Humbley, J. (1994). Quelques aspects de la datation de termes techniques: Le cas de l'enregistrement et de la reproduction sonores. *Meta, 39*(4), 701-715.

Humbley, J. (1996). La légitimation en terminologie. *Sémiotiques, 11*, 119-136.

Humbley, J. (1997). Is terminology specialized lexicography? The experience of French-speaking countries. *Hermes, 18*, 13-31.

Humbley, J. (1998). Terminotique et documentation. *Terminologies Nouvelles, 18*, 3-4.

Humbley, J. (2004). La réception de l'œuvre d'Eugen Wüster dans les pays de langue française. *Cahiers du CIEL*, 33-51.

Humbley, J. (2007). Vers une réception plurielle de la théorie terminologique de Wüster: Une lecture commentée des avant-propos successifs du manuel *Einführung in die allgemeine Terminologielehre*. [Electronic version]. *Langages, 4*(168), 82-91.

Infoterm. (2004). 30 years of Infoterm. Retrieved from http://www.infoterm.info/activities/news/2004/2004_08_25.php

Infoterm News. (1979a). Report on Inforterm Advisory Board Meeting, Vienna, April 4, 1979. *International Classification, 6*(2), 124.

Infoterm News. (1979b). Report on TermNet activities. *International Classification, 6*(3), 182-183.

Infoterm News. (1982). Terminological activities in developing countries. *International Classification, 9*(2), 101-102.

Irazazábal, A. d. (1999). Situación de la terminología española. In M. T. Cabré (Ed.), *Terminología y modelos culturales* (pp. 19-36). Barcelona: Institut Universitari de Lingüística Aplicada, Universitat Pompeu Fabra.

ISO/TC 37. (2004). 50 Years ISO/TC 37 "Terminology and other language resources" - A history of 65 years of standardization of terminological principles and methods. (ISO/TC 37 N 499 ISO/TC 37 AG N 117), p.6. Retrieved from http://www.infoterm.info/pdf/activities/Standing_document_02_50_years_ISO_TC_37.pdf

Janton, P., & Tonkin, H. (1993). *Esperanto: Language, literature, and community* (H. Tonkin, J. Edwards & K. Johnson-Weiner, Trans.). Albany: State University of New York Press.

Järvi, O. (1997). The sign theories of Eugen Wüster and Charles S. Pierce as tools in research of graphical computer user interfaces. *Terminology Science & Research, 8*(1-2), 63-72.

Jauss, H. R. (1982). *Toward an aesthetic of reception* (T. Bahti, Trans. Vol. 2). Minneapolis: University of Minnesota Press.

Jauss, H. R., & Benzinger, E. (1970). Literary history as a challenge to literary theory. *New Literary History, 2*(1), 7-37.

Johnson, R. L., & Sager, J. C. (1980). Standardization of terminology in a model of communication. *International Journal of the Sociology of Language, 23*, 81-104.

Jumpelt, R. W. (1955). Towards a FIT-policy in scientific and technical translation. *Babel, 1*(1), 21-25.

Jumpelt, R. W. (1960). [Review of the book *A Bibliography of Monolingual Scientific and Technical Glossaries. (Vol.II Miscellaneous Sources)* by Eugen Wüster]. *Babel, 6*(2), 81.

Jumpelt, R. W. (1963). *Proposal of the International Federation of Translators (FIT) concerning the establishment of an international committee for the co-ordination of terminological activities*. (UNESCO/NS/Doc/WP3.2, 5 p). Paris: UNESCO.

Keppler, K. (1960). The standardization of German scientific and engineering terms. *German Quarterly, 33*(1), 35-44.

Kesselman, R. (1981). Report on the International Colloquy: Special Language Research and Theory, Focus: Spanish. *International Classification, 8*(2), 92-93.

Kingscott, G. (1998). Tribute to the founder of terminology: 1998 marks the centenary of Eugen Wüster's birth. *Language Today, 11*, 14-19.

Klinger, B. (1989). Digressions at the Cinema: Reception and mass culture. *Cinema Journal, 28*(4), 3-19.

Kockaert, H. J., & Antia, B. (2008). Comment modéliser des concepts en rapprochant un langage orienté objet et deux normes terminologiques orientées concept? In C. Roche (Ed.), *TOTh 2008. Actes de la deuxième conférence TOTh. Terminologie & Ontologie: Théories et Applications* (pp. 105-125). Annecy: Institut Porphyre.

Kocourek, R. (1974). [Review of the book *The Road to Infoterm* by Eugen Wüster]. *International Classification, 1*(2), 104-107.

Kökény, L., & V, B. (1933). *Enciklopedio de Esperanto [Encyclopedia of Esperanto]*. Retrieved June 9, 2009, from http://eventoj.freeweb.hu/steb/gxenerala_naturscienco/enciklopedio-1/encikl.htm

Koskela, M. (2001). Teenage rebellion or midlife crisis? A comment on Gerhard Budin's paper 'A critical evaluation of the state-of-the-art of terminology theory'. *Terminology Science & Research, 12*(1-2), 24-27.

Kretzenbacher, H. L. (2001). Terminology - On whose terms? *Terminology Science & Research, 12*(1-2), 41-48.

Krommer-Benz, M., Manu, A., & Budin, G. (1999). Terminography in UN-organizations: A brief overview. In L. Hoffmann, H. Kalverkämper & H. E. Wiegand (Eds.), *Fachsprachen: Ein internationales Handbuch zur Fachsprachenforschung und Terminologiewissenschaft / Languages for special purposes: An international handbook of special-language and terminology research* (Vol. 2, pp. 2108-2123). Berlin/New York: Walter de Gruyter.

Kuhn, T. (1970). *The structure of scientific revolutions* (2nd ed.). Chicago: The University of Chicago.

Lager, E., Rodríguez, E., & Vergara, O. (2006). La definición en la terminología académica de la Universidad del Valle. *Lenguaje, 34*, 125-157.

Lakatos, I. (1970). Falsification and the methodology of scientific research programmes. In I. Lakatos & A. Musgrave (Eds.), *Criticism and the growth of knowledge. Proceedings of the International Colloquium in the Philosophy of Science* (Vol. 4, pp. 91-195). Cambridge: Cambridge University Press.

Lakatos, I. (1978). *The methodology of scientific research programmes*. Cambridge: Cambridge University Press.

Lang, A., Lang, F., & Reiter, R. (1979). Bibliographie der Arbeiten Wüsters auf den Gebieten der Terminologie, Dokumentation, Klassifikation, Normung und Sprachwissenschaft. In H. Felber, F. Lang & G. Wersig (Eds.), *Terminologie als angewandte Sprachwissenschaft: Gedenkschrift für Univ.-Prof. Dr. Eugen Wüster* (pp. 29-57). München/New York/London/Paris: K.G.Saur.

Lang, F. (1958). A la recherche des principes de terminologie et de lexicographie. *Babel, 4*, 112-113.

Lang, F. (1998). Eugen Wüster - His Life and Work until 1963. In E. Oeser & C. Galinski (Eds.), *Eugen Wüster (1898-1977): Leben und Werk - Ein österreichischer Pionier der Informationsgesellschaft. His life and work - An Austrian pioneer of the information society. Proceedings of the International Conference on Professional Communication and Knowledge Transfer* (Vol. 1, pp. 13-26). Vienna, Austria: TermNet.

Lara, L. F. (1986). On the difficult path of terminology in Spanish-speaking countries. In G. Rondeau & J. C. Sager (Eds.), *Termia 84: Terminologie et coopération internationale. Terminology and international cooperation. Proceedings of the International Conference on Terminology* (pp. 91-99). Loiusville: GIRSTERM, Université Laval.

Lategan, B. C. (1991). Reception: Theory and practice in reading Romans 13. In P. J. Hartin & J. H. Petzer (Eds.), *Text and interpretation: New approaches in the criticism of the New Testament* (pp. 145 - 170). Leiden: Brill.

Laudan, L. (1977). *Progress and its problems: Toward a theory of scientific growth*. Berkeley: University of California Press.

Laurén, C., & Picht, H. (1993). Vergleich der terminologischen Schulen. In C. Laurén & H. Picht (Eds.), *Ausgewählte Schriften zur Terminologie* (pp. 493–539). Vienna: Termnet.

Laurén, C., & Picht, H. (2006). Approaches to terminological theories: A comparative study of the state-of-the-art. In H. Picht (Ed.), *Modern approaches to terminological theories and applications* (Vol. 36, pp. 163-184). Bern: Peter Lang.

Lefevere, A. (1995). Introduction: Comparative literature and translation. *Comparative Literature, 47*(1), 1-10.

Lerat, P. (1988). Terminologie et sémantique descriptive. *La Banque des Mots*(Special issue), 11-30.

Lerat, P. (1989). Les fondements théoriques de la terminologie. *La Banque des Mots*(Special issue), 51-62.

Lerat, P. (1990). L'hyperonymie dans la structuration des terminologies. *Langages, 25*(98), 79-86.

Lerat, P. (2008). Propositions pour un réseau conceptuel des instruments de mesure oenologiques. In C. Roche (Ed.), *TOTh 2008. Actes de la deuxième conférence TOTh. Terminologie & Ontologie: Théories et Applications* (pp. 73-90). Annecy: Institut Porphyre.

Lervad, S. (2009). Recherche en terminologie et applications pratiques: Quelques axes de collaboration avec des partenaires industriels danois. *Revue Française de Linguistique Appliquée, 14*(2), 73-80. Retrieved from http://www.cairn.info/article_p.php?ID_ARTICLE=RFLA_142_0073

Lessem, A. (1988). Bridging the gap: Contexts for the reception of Haydn and Bach. *International Review of the Aesthetics and Sociology of Music, 19*(2), 137-148.

Lethuillier, J. (1980). Les "bibles" du traducteur technique. *Meta, 25*(1), 101-110.

L'Homme, M.-C. (2004). *La terminologie: Principes et techniques*. Montréal: Les Presses de l'Université de Montréal.

L'Homme, M.-C. (2005). Sur la notion de "terme". *Meta 50*(4), 1112-1132.

L'Homme, M.-C. (2006a). The processing of terms in dictionaries: New models and techniques. A state of the art. *Terminology, 12*(2), 181-188.

L'Homme, M.-C. (2006b). A look at some Canadian contributions to terminology. In H. Picht (Ed.), *Modern approaches to terminological theories and applications* (Vol. 36, pp. 55-75). Bern: Peter Lang.

L'Homme, M.-C., Heid, U., & Sager, J. C. (2003). Terminology during the past decade (1994–2004): An Editorial statement. *Terminology, 9*(2), 151–161.

Lurquin, G. (1979). In memoriam Eugen Wüster - Introduction. *Le Langage et l'Homme, 40*(2), 55-58.

Maillot, J. (1969). *La traduction scientifique et technique*. Paris: Eyrolles.

Manu, A. (1980). Infoterm et le réseau de terminologie TermNet. *Meta, 25*(1), 196-205.

Mayer, A. W. J. (1959). [Review of the book *A Bibliography of Monolingual Scientific and Technical Glossaries. (Vol.II Miscellaneous Sources)* by Eugen Wüster]. *Revue de la Documentation, 26*(3), 78-79.

Mounin, G. (1963). *Les problèmes théoriques de la traduction*. Paris: Gallimard.

Múnera Torrez, M. T., & Montoya Correa, C. A. (2009). El trabajo terminológico en la Escuela Interamericana de Bibliotecología de la Universidad de Antioquia. In C. Naumis Peña (Ed.), *Memoria del I Simposio internacional sobre organización del conocimiento: Bibliotecología y terminología* (pp. 195-208). México: Universidad Nacional Autónoma de México.

Myking, J. (1997). The sign models of terminology - Recent developments and current issues. *Terminology Science & Research, 8*(1-2), 51-62.

Myking, J. (2001a). Sign models in terminology: Tendencies and functions. *LSP & Professional Communication, 1*(2), 45-62. Retrieved from http://rauli.cbs.dk/index.php/LSP/article/viewFile/1924/1927

Myking, J. (2001b). Against prescriptivism? The 'socio-critical' challenge of terminology. *Terminology Science & Research, 12*(1-2), 49-64.

Nedobity, W. (1983). The general theory of terminology: A basis for the preparation of classified defining dictionaries. [Journal of the dictionary society of North America]. *Dictionaries, 5*, 69-75.

Nedobity, W. (1985). Terminology and artificial intelligence. *International Classification, 12*(1), 17-19.

Nedobity, W. (1988). Eugen Wüster et les critiques du langage du Cercle de Vienne. *Communication and Cognition, 21*(3-4), 399-410.

Nedobity, W. (1989). Concepts versus meaning as reflected by the works of E. Wüster and L. Wittgenstein. *International Classification, 16*(1), 24-26.

Neurath, O., Hahn, H., & Carnap, R. (1996). The scientific conception of the world: The Vienna Circle. In S. Sarkar (Ed.), *The Emergence of logical empiricism: From 1900 to the Vienna Circle* (pp. 321-340). New York/London: Garland Publishing.

Niaz, M. (1993). Competing research programs in Science Education: A Lakatosian interpretation. *Interchange, 24*(1-2), 181-190.

Niaz, M. (1998). The epistemological significance of Piaget's developmental stages: A Lakatosian interpretation. *New Ideas in Psychology, 16*, 47-59.

Nuopponen, A. (1994a). Wüster revisited: On causal concept relationships and causal concept systems. In M. Brekke, Ø. Andersen, T. Dahl & J. Myking (Eds.), *Applications and implications of current LSP research. Proceedings of the 9th European symposium on LSP* (Vol. 2, pp. 532-539). Bergen: Fagbokforlaget.

Nuopponen, A. (1994b). On causality and concept relationships In J. Draskau & H. Picht (Eds.), *Proceedings of the International Conference on Terminology Science and Terminology Planning and the International IITF-Workshop Theoretical Issues of Terminology Science* (Vol. 4, IITF Series, pp. 217-230). Vienna: TermNet.

Nuopponen, A. (1994c). Chasing a Fata Morgana - Terminology work and hypermedia. In M. Linna & P. Ruotsala (Eds.), *Proceedings of Hypermedia in Vaasa 94. Conference on Computers and Hypermedia in Engineering Education* (pp. 326-330). Vaasa: Vaasa Institute of Technology.

Nuopponen, A. (1996a). Terminology online: From term banks to the World Wide Web. *Terminology Science & Research, 7*(1), 21-27.

Nuopponen, A. (1996b). Terminological information and activities in World Wide Web. In C. Galinski & K.-D. Schmitz (Eds.), *TKE'96: Terminology and knowledge engineering. Proceedings of the Fourth International Congress* (pp. 92-99). Frankfurt: Indeks Verlag.

Nuopponen, A. (2003). Terminology. In W. J. Frawley (Ed.), *International encyclopedia of linguistics* (Vol. 4, pp. 225-227). Oxford and New York: Oxford University Press.

Oeser, E., & Galinski, C. (Eds.). (1998). *Eugen Wüster (1898-1977): Leben und Werk - Ein österreichischer Pionier der Informationsgesellschaft. His life and work - An Austrian pioneer of the information society. Proceedings of the International Conference on Professional Communication and Knowledge Transfer* (Vol. 1). Vienna: TermNet.

Office of the Commissioner of Official Languages. (2010). *Official Languages at the Heart of our Identity an Overview of the Official Languages Act*. Canada: Minister of Public Works and Government Services Canada Retrieved from http://www.ocol-clo.gc.ca/docs/e/ola_llo_e.pdf.

Office québécois de la langue française. (2004). *Politique de l'officialisation linguistique. Politique mise à jour par l'Office québécois de la langue française à sa séance du 5 mars 2004*. Québec: Office québécois de la langue française.

Orne, J. (1976). [Book review of *The Road to Infoterm. Two Reports Prepared on Behalf of UNESCO: Inventory of Sources of Scientific and Technical Terminology; A Plan for Establishing an International Information Centre (Clearinghouse) for Terminology* by Eugen Wüster]. *The Library Quarterly, 46*(4), 449-450. doi: 10.1086/620590

Osio, B. (Ed.). (2002). *Terminómetro. Número especial 6. La terminología en los países andinos*. Paris: Union Latine.

Pavel, S. (1993). Neology and phraseology as terminology-in-the-making. In H. B. Sonneveld & K. L. Loening (Eds.), *Terminology. Applications in interdisciplinary communication* (pp. 21-34). Amsterdam/Philadelphia: John Benjamins.

Pavel, S., & Nolet, D. (2001). *Précis de terminologie*. Canada: Bureau de la traduction. Direction de la terminologie et de la normalisation.

Picht, H. (1981). Terminological activities in the Nordic countries. In M. Krommer-Benz (Ed.), *Theoretical and methodological problems of terminology. Proceedings of the International Symposium* (Vol. 6 Infoterm Series, pp. 242-252). München-New York-London-Paris: K-G Saur.

Picht, H. (1982). Reflexions on training in terminology in the 1980's. In W. Nedobity (Ed.), *Terminologies for the eighties. With a special section: 10 years of Infoterm* (Vol. 7 Infoterm Series, pp. 172-185). München-New York-London- Paris: K.G.Saur.

Picht, H. (1994/1995). The multidisciplinary nature of terminology: Remembering Eugen Wüster. *ALFA: Actes de Langue Française et de Linguistique / Symposium on French Language and Linguistics, 7/8*, 137-161.

Picht, H. (1997). Terminologiens videnskabshistoriske udvikling. In C. Laurén, J. Myking & H. Picht (Eds.), *Terminologi som vetenskapsgren* (pp. 47-61). Lund: Studentlitteratur.

Picht, H. (2007). Terminology yesterday, today and tomorrow. *Terminology Science & Research, 18*. Retrieved from http://lipas.uwasa.fi/hut/svenska/iitf/tsr2005/vol18/vol18_pic.php

Picht, H. (Ed.). (2006). *Modern approaches to terminological theories and applications* (Vol. 36). Bern: Peter Lang.

Picht, H., & Acuña-Partal, C. (1997). Aspects of terminology training. In S. E. Wright & G. Budin (Eds.), *Handbook of terminology management* (Vol. 1, pp. 305-???). Amsterdam: John Benjamins.

Picht, H., & Draskau, J. (1985). *Terminology: An introduction*. Guildford: University of Surrey, Department of Linguistic and International Studies.

Picht, H., & Schmitz, K.-D. (Eds.). (2001). *Terminologie und Wissensordnung. Ausgewählte Schriften aus dem Gesamtwerk von Eugen Wüster*. Vienna: TermNet.

Pilke, N., & Toft, B. (2006). The theoretical foundations of the Nordic approach to terminology. In H. Picht (Ed.), *Modern approaches to terminological theories and applications* (Vol. 36, pp. 35-53). Bern: Peter Lang.

Pinta, B. (1980). [Review of the book *International Bibliography of Standardized Vocabularies* by Eugen Wüster] 2nd enlarged and completely rev. ed. - prepared by Helmut Felber, Magdalena Krommer-Benz, Adrian Manu. *Bulletin des Bibliothèques de France, 25*(2).

Plested Álvarez, M. C., & Castrillón Cardona, E. R. (2004). Panorama de la terminologie (Colombie). *Íkala, 9*(15), 289-312.

Popp, C. (1998). Terminology and MERCOSUR regional activities. In A. Munteanu (Ed.), *Terminology work and knowledge transfer. Best practice in terminology management and terminography. Proceedings of the 4th Infoterm International Conference on Professional Communication and Knowledge Transfer* (Vol. 2, pp. 75-83). Vienna: TermNet.

Popper, K. R. (1963). *Conjectures and refutations: The growth of scientific knowledge*. London: Routledge and Kegan Paul.

Pozzi, M. (1996). Terminological activities in Spanish-speaking countries. *Terminology, 3*(1), 171-176.

Quiroz, G. (2002). La terminología en Colombia: Panorama general y algunas pautas históricas. *Terminómetro. Número especial. La terminología en los países andinos, 6*, 3-6.

Rastier, F. (1995). Le terme: Entre ontologie et linguistique. *La Banque des Mots, 7*, 35-65.

Rastier, F. (2001). *Arts et sciences du texte*. Paris: Presses universitaires de France.

Raventós de Castro, D. (1988a). BTUSB: A terminology data bank for Venezuela. In M. Vasconcellos (Ed.), *Technology as translation strategy* (pp. 76-78). Binghamton: State University of New York at Binghamton.

Ray, C. (2000). Logical positivism. In W. H. Newton-Smith (Ed.), *A companion to the philosophy of science* (pp. 243-251). Malden: Blackwell Publishers.

Rayward, W. B. (1993). International library and bibliographical organizations. In R. Wedgeworth (Ed.), *World encyclopedia of library and information services* (3 ed., pp. 382-387). Chicago: American Library Association.

Realiter. (2001). Ve Réunion plénière du réseau panlatin de terminologie – Realiter. Retrieved November 23, 2009, from http://www.realiter.net/spip.php?article575

Reboul, S. (1995). Télématique et socioterminologie. *Meta 40*(2), 296-307.

Remes, M. (1991). Mexique terminologie et information. *Terminómetro, 6*(5), 11-13.

Resche, C. (2000b). An approach to interface terminology: The example of environmental economics in English as a foreign language. *Meta, 45*(4), 628-645.

Resche, C. (2007). Human Capital: L'avers et le revers d'un terme métaphorique. *LSP & Professional Communication, 7*(2), 23-48. Retrieved from http://rauli.cbs.dk/index.php/LSP/article/viewFile/2104/2103

Rey, A. (1979). *La terminologie. Noms et notions* (1rst ed.). Paris: Presses universitaires de France.

Rey, A. (1998/1999). Terminology between the experience of reality and the command of signs. *Terminology, 5*(1), 121-134.

Roche, C. (2005). Terminologie et ontologie. *Langages, 39*(157), 48-62.

Roche, C. (2007). Le terme et le concept: Fondements d'une ontoterminologie. In C. Roche (Ed.), *TOTh 2007. Actes de la Première Conférence. Terminologie et Ontologie: Théories et Applications.* (pp. 1-22). Anncey: Institut Porphyre.

Roche, C. (2008). Faut-il revisiter les *Principes terminologiques*? In C. Roche (Ed.), *TOTh 2008. Actes de la deuxième conférence TOTh. Terminologie & Ontologie: Théories et Applications* (pp. 53-72). Annecy: Institut Porphyre.

Rodríguez Ortega, N., & Schnell, B. (2005a). La terminología: Historia y evolución de una disciplina. *ACTA, 36*, 83-90. Retrieved from http://www.acta.es/articulos_mf/36081.pdf

Rodríguez Ortega, N., & Schnell, B. (2005b). La terminología: Panorama actual y cooperación internacional. *ACTA, 37*, 11-25. Retrieved from http://www.acta.es/articulos_mf/37009.pdf

Rondeau, G. (1981). *Introduction à la terminologie*. Montréal: Centre éducatif et culturel.

Rousseau, L.-J. (1981). La normalisation terminologique à l'Office de la langue française. In M. Krommer-Benz (Ed.), *Theoretical and methodological problems of terminology. Proceedings of the International Symposium* (Vol. 6 Infoterm Series, pp. 320-333). München-New York-London-Paris: K-G Saur.

Rousseau, L.-J. (1993). Terminology and language in contact in Québec. In H. B. Sonneveld & K. L. Loening (Eds.), *Terminology. Applications in interdisciplinary communication* (pp. 35-42). Amsterdam/Philadelphia: John Benjamins.

Ruppert, L. (1956). *History of the International Electrotechnical Commission*. Geneva: Bureau Central de la Commission Electrotechnique Internationale.

Sager, J. C. (1979). Training in terminology: Needs, achievements and prospectives in the world. In H. Felber, F. Lang & G. Wersig (Eds.), *Terminologie als angewandte Sprachwissenschaft: Gedenkschrift für Univ.-Prof. Dr. Eugen Wüster* (pp. 149-163). München/New York/London/Paris: K.G.Saur.

Sager, J. C. (1990). *A practical course in terminology processing*. Amsterdam/Philadelphia: John Benjamins.

Sager, J. C., & Johnson, R. L. (1978). Terminology: The state of the art. *Der Sprachmittler, 16*, 82-96.

Samain, D. (2010). Eugen Wüster. De l'espéranto à la terminologie. In M. Heinz (Ed.), *Cultures et lexicographies. Actes des "Troisièmes Journées allemandes des dictionnaires" en l'honneur d'Alain Rey* (pp. 279-296). Berlin: Frank & Timme.

Savatovsky, D. (2007). Le vocabulaire philosophique de Lalande (1902-1923): Lexicographie spécialisée ou prototerminographie? *Langages, 4*(168), 39-52.

Savatovsky, D., & Candel, D. (Eds.). (2007). *Genèses de la terminologie contemporaine - Sources et réception. Langages, 4(168)*. France: Armand Colin.

Schmitz, K.-D. (2004). Comment on terminological dictionnaries and data banks. *Terminology Science & Research, 15*, 79-87. [Reprinted as Terminological dictionaries and data banks; comments on the paper of L.B. Tkacheva and S.D. Shelov. In G. Budin, C. Laurén, H. Picht, N. Pilke, M. Rogers & B. Toft (Eds.). (2006), *The theoretical foundations of terminology comparison between Eastern Europe and the Western countries. Proceedings of the Colloquium Comparison of the Theoretical Foundations of Terminology in Eastern Europe and the Western Countries* (pp. 181-190). Würzburg: Ergon Verlag].

Schmitz, K.-D. (2005). *Developments in computational terminology management and its influence on terminology science and terminology work*. Paper presented at the 5th Conference "Hellenic Language and Terminology", University of Cyprus. http://www.eleto.gr/download/Conferences/5th%20Conference/5th_24-11-Schmitz%20Klaus-Dirk_Paper.pdf

Schmitz, K.-D. (2006). Terminology and terminological databases. In K. Brown (Ed.), *Encyclopedia of Language and Linguistics* (2nd ed., pp. 578-587). Oxford: Elsevier Publishers.

Seipelt, U. (1982). Report on the research project 3938 "The scientific legacy of Eugen Wüster". *TermNet News, 6*, 62-64.

Slodzian, M. (1993). La V.G.T.T. (Vienna General Theory of Terminology) et la conception scientifique du monde. *Le Langage et l'Homme, 28*(4), 223-232.

Slodzian, M. (1994/1995). La doctrine terminologique, nouvelle théorie du signe au carrefour de l'universalisme et du logicisme. *ALFA: Actes de Langue Française et de Linguistique / Symposium on French Language and Linguistics, 7/8*, 121-136.

Slodzian, M. (1995). Comment revisiter la doctrine terminologique aujourd'hui. *La Banque des Mots, 7*, 11-18.

Slodzian, M. (2000). L'émergence d'une terminologie textuelle et le retour du sens. In H. Béjoint & P. Thoiron (Eds.), *Le sens en terminologie* (pp. 61-85). Lyon: Presses universitaires de Lyon.

Slodzian, M. (2006). *La terminologie, historique et orientations*. Paper presented at the SdC 2006 - Semaine de la Connaissance, Nantes - 26 au 30 juin 2006. http://www.sdc2006.org/cdrom/contributions/Slodzian_SDC2006.pdf

Smith, B. (2006a). From concepts to clinical reality: An essay on the benchmarking of biomedical terminologies. *Journal of Biomedical Informatics, 39*(3), 288-298.

Smith, B. (2006b). Standardisation flaws. *The Risk of Freedom. Brifing, 26*, 3-4.

Smith, B., & Ceusters, W. (2007). Ontology as the core discipline of biomedical informatics - Legacies of the past and recommendations for the future direction of research. In S. Stuart & G. Dodig-Crnkovic (Eds.), *Computation, information, cognition: The nexus and the liminal* (pp. 104-122). Newcastle: Cambridge Scholars Press.

Smith, B., Ceusters, W., & Temmerman, R. (2005). Wüsteria. In R. Engelbrecht, A. Geissbuhler, C. Lovis & G. Mihalas (Eds.), *Connecting medical informatics and bio-informatics. Proceedings of Mie2005, the XIXth International Congress of the European Federation for Medical Informatics* (Vol. 116: Studies in Health Technology and Informatics, pp. 647–652). Amsterdam: IOS Press.

Sonneveld, W. B., & Loening, K. L. (1988). A terminologist's and a chemist's look at chemical neologisms. In R. A. Strehlow (Ed.), *Standardization of technical terminology: Principles and practices* (Vol. 2, pp. 23-28). Philadelphia: ASTM.

Stadler, F. (1998). Vienna Circle. *Routledge Encyclopedia of Philosophy Online*. Retrieved from http://www.rep.routledge.com/article/DD076

Stadler, F. (2003). What is the Vienna Circle? Some methodological and historiographical answers. In F. Stadler (Ed.), *The Vienna circle and logical empiricism: Re-evaluation and future perspectives* (pp. XI-XXIII). Dordrecht Kluwer Academic Publishers.

Strehlow, R. A. (Ed.). (1988). *Standardization of technical terminology: Principles and practices* (Vol. 2). Philadelphia: ASTM.

Temmerman, R. (1997a). Questioning the univocity ideal. The difference between sociocognitive terminology and traditional terminology. *Hermes, 18*, 51-91.

Temmerman, R. (1997b). The process of (neo)-lexicalization: The case of the life sciences. In C. Schaetzen de (Ed.), *Terminologie et interdisciplinarité. Actes du colloque organisé en avril 1996 par le Centre de terminologie de Bruxelles (Institut libre Marie Haps) et l'Association européenne des professeurs de langues vivantes (AEPLV)* (pp. 47-62). Louvain-la-neuve: Peeters.

Temmerman, R. (1998). *Terminology beyond standardisation. Language and categorisation in the life sciences.* PhD, Leuven.

Temmerman, R. (1998/1999). Why traditional terminology impedes a realistic description of categories and terms in the life sciences. *Terminology, 5*(1), 77-92.

Temmerman, R. (2000a). Une théorie réaliste de la terminologie: Le sociocognitivisme. *Terminologies Nouvelles, 21*, 58-64.

Temmerman, R. (2000b). *Towards new ways of terminology description. The sociocognitive approach*. Amsterdam/Philadelphia: John Benjamins.

Temmerman, R. (2001). Sociocognitive terminology theory. In M. T. Cabré & J. Feliu (Eds.), *Terminología y cognición: II Simposio Internacional de Verano de Terminología* (pp. 75-92). Barcelona: Universitat Pompeu Fabra.

Temmerman, R. (2003a). *User requirements in terminography*. Paper presented at the 2nd International Terminology Conference - Terminology: The state of the theories. CIT 2003 (10-12 December 2003), Lisboa, Portugal. http://cvc.ehb.be/pub/CIT2003.pdf

Temmerman, R. (2003b). *The ontology shift in terminography*. Paper presented at the Seminar on Multilingual Terminography: Towards Intelligent Dictionaries? (28 February 2003), Brussels. Erasmushogeschool, Dept. of Applied Linguistics. http://cvc.ehb.be/pub/pres_temmerman.pdf.

Temmerman, R., & Kerremans, K. (2003). Termontography: Ontology building and the sociocognitive approach to terminology description. In E. Hajicová, A. Kotešovcová & J. Mírovský (Eds.), *Proceedings of XVII International Congress of Linguists [CD-ROM]* (pp. 1-10). Prague: Matfyzpress, MFF UK.

Temmerman, R., & Kerremans, K. (2005). *What will be considered a term? From static terminology description to dynamic terminology processing*. Paper presented at the The 15th European Symposium on Languages for Special Purposes. New Trends in Specialized Discourse, Bergamo 29 August – 2 September. http://taalkunde.ehb.be/sites/www2.ehb.be/files/u96/LSP2005_RK.pdf

Thellefsen, M. (2005). The role of special language in relation to knowledge organization. *Proceedings of the American Society for Information Science and Technology, 40 (1)*, 206-212. Retrieved from http://www3.interscience.wiley.com/cgi-bin/fulltext/109882793/PDFSTART

Thompson, M. P. (1993). Reception theory and the interpretation of historical meaning. *History and Theory, 32*(3), 248-272.

Tixier, J., & Jeanjean, T. (2000). La méthodologie des programmes de recherche: Présentation, évaluation et pertinence pour les sciences de gestion. *Cahier de recherche CREPA, 65*, 1-23. Retrieved from http://vdrp.chez-alice.fr/Lakatos.pdf

Toft, B. (2001). [Review of the book *Towards new ways of terminology description: The sociocognitive approach* by R. Temmerman]. *Terminology, 7*(1), 125-128.

Toft, B., & Picht, H. (2001). Terminology science at the crossroads? *Terminology Science & Research, 12*(1-2), 3-4.

Tonkin, H. (1993). Esperanto studies: An overview. In I. M. Richmond (Ed.), *Aspects of internationalism: Language & culture* (Vol. 3: Papers of the Center for Research and Documentation on World Language Problems, pp. 9-20). Lanham, New York and London: University Press of America.

Translation Bureau/Bureau de la traduction. (n.d, June 6, 2011). The pavel terminology tutorial. Retrieved April 9, 2012, from http://www.btb.termiumplus.gc.ca/didacticiel-tutorial/lecon-lesson-1/index-eng.html

UNESCO. (1957). *Proposal to establish a terminological working centre to assist the compilation of special dictionaries*. (NS/Ter 445/7315, 3 p). Paris: UNESCO.

UNESCO. (1961). *International advisory committee on bibliography, documentation and terminology. (Final Report-First Session)*. (UNESCO/CUA/111, 10 p). Paris: UNESCO.

UNESCO. (1964). *Report of the meeting of Working Party No.3 on "Scientific translation and terminology"*. (UNESCO/NS/187, 8 p). Paris: UNESCO.

UNESCO. (1976). *Report on the meeting for the evaluation of the International Information Centre for Terminology (Infoterm)*. (SC/UNISIST/ST.COM./BUR.5/3, 14 p). Paris: UNESCO.

UNESCO. (2004). *Basic texts. Including texts and amendments adopted by the General Conference at its 32nd session* (2004 ed.). Paris: UNESCO.

Unión Latina. (2009). Panorama sobre la terminología en América Central, México y el Caribe [Special Issue]. *Terminómetro*.

Vallejo, G. C., Plested, M. C., & Zapata, G. (2004). La comunicación no verbal en el nado sincronizado. *Educación Física y Deporte, 23*(2), 79-95.

Van Campenhoudt, M. (in press). Que nous reste-t-il d'Eugen Wüster? *Actes du colloque international Eugen Wüster et la terminologie de l'École de Vienne, (Université de Paris 7, 3 et 4 février 2006)*.

Velásquez, G. (2002). La traducción y la terminología en la comunicación bilingüe mediada. *Meta, 47*(3), 444-459.

Vienna Working Groups. (1978). Report from the Vienna Working Groups. 1st European Symposium on LSP, Vienna, Austria, August 1977. *Unesco Alsed-LSP Newsletter, 1*(3), 5-7.

Volkova, I. N. (1981). Basic methodological principles of standardization of terminology in the USSR. In M. Krommer-Benz (Ed.), *Theoretical and methodological problems of terminology. Proceedings of the International Symposium* (Vol. 6 Infoterm Series, pp. 245-352). München-New York-London-Paris: K-G Saur.

Weissenhofer, P. (1995). *Conceptology in terminology theory, semantics and word formation* (Vol. 6, IITF Series). Vienna: TermNet.

Wmffre, I. (2007). *Breton orthographies and dialects* (Vol. 1). Oxford: Peter Lang.

Wright, S. E. (2003). From the semiotic triangle to the semantic web. *Terminology Science & Research, 14*, 111-135. [Reprinted in Budin, G., Laurén, C., Picht, H., Pilke, N., Rogers, M., & Toft, B. (Eds.). (2006). *The theoretical foundations of terminology comparison between Eastern Europe and the Western countries. Proceedings of the Colloquium Comparison of the Theoretical Foundations of Terminology in Eastern Europe and the Western Countries* (pp. 69-99). Würzburg: Ergon Verlag].

Wüster, E., Felber, H., Krommer-Benz, M., & Manu, A. (1979). *International bibliography of standardized vocabulaires - Bibliographie internationale de vocabulaires normalisés -*

Internationale Bibliographie der Normwörterbücher (2nd enlarged and completely revised ed. Vol. 2 Infoterm Series). München: K.G.Saur Verlag.

Zawada, B. E., & Swanepoel, P. (1994). On the empirical inadequacy of terminological concept theories: The case for prototype theory. *Terminology, 1*(2), 253-275.

Appendix A. Eugen Wüster's Bibliography

Appendix A. Eugen Wüster's Bibliography

Wüster, E. (1923/1929). *Enciklopedia vortaro esperanta-germana, kun speciala elmontro de la Zamenjof-a lingvuzo - Enzyklopedisches Wörterbuch Esperanto-Deutsch mit besonderer Aufweisung des Zamenhof'schen Sprachebrauchs* (Vol. 1. A-K). Leipzig: Ferdinard Hirt & Son.

Wüster, E. (1931). *Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik. (Die nationale Sprachnormung und ihre Verallgemeinerung)* (1^{rst} ed.). Berlin: VDI Verlag.

Wüster, E. (1952). The coming concentration of international terminology work (Hans J. Eberstark, Trans). *Revue de la Documentation, 19*(1), 1-7. (Original work published 1951).

Wüster, E. (1955a). *Bibliography of monolingual scientific and technical glossaries - Bibliographie de vocabulaires scientifiques et techniques monolingues* (Vol. I: National standards). Paris: UNESCO.

Wüster, E. (1955b). *Standardization of technical terms - Problems and progress (UNESCO Trans.)*. (UNESCO/Ref. 96/ 5915, 13 p). Paris: UNESCO. (Original work published 1955).

Wüster, E. (1959a). La normalisation du langage technique. Problèmes et état actuel (E. Trofer, J. Lefevre, F. Lang, & R. Fisher-Mayenburg, Trans.). *Revue de la Documentation, 26*(2), 43-49. (Original work published 1955).

Wüster, E. (1959b). *Bibliography of monolingual scientific and technical glossaries - Bibliographie de vocabulaires scientifiques et techniques monolingues* (Vol. II: Miscellaneous sources). Lausanne: UNESCO.

Wüster, E. (1959c). New monolingual glossaries (I). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 5*(4), 229-233.

Wüster, E. (1960a). New monolingual glossaries (II). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 6*(1), 38-40.

Wüster, E. (1960b). New monolingual glossaries (III). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 6*(2), 92-94.

Wüster, E. (1961a). New monolingual glossaries (IV). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 7*(1), 45-47.

Wüster, E. (1961b). New monolingual glossaries (V). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 7*(4), 203-204.

Wüster, E. (1962). New monolingual glossaries (VI). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 8*(4), 212-214.

Wüster, E. (1964a). *Dictionaries and glossaries (Gaps: in languages; in disciplines).* (UNESCO/NS/Doc/WP/3.4, 10 p). Paris: UNESCO.

Wüster, E. (1964b). New monolingual glossaries (VII). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 10*(4), 193-195.

Wüster, E. (1965a). New monolingual glossaries (VIII). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 11*(1), 54-56.

Wüster, E. (1965b). New monolingual glossaries (IX). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 11*(2), 95-98.

Wüster, E. (1965c). New monolingual glossaries (X). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 11*(3), 142-146.

Wüster, E. (1965d). New monolingual glossaries (XI). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 11*(4), 191-199.

Wüster, E. (1966a). *Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik. (Die nationale Sprachnormung und ihre Verallgemeinerung)* (2nd ed.). Bonn: Bouvier.

Wüster, E. (1966b). New monolingual glossaries (XII). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 12*(2), 125-128.

Wüster, E. (1966c). New monolingual glossaries (XIII). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 12*(3), 173-176.

Wüster, E. (1966d). New monolingual glossaries (XIV). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 12*(4), 221-224.
Wüster, E. (1967a). New monolingual glossaries (XV). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 13*(1), 54-57.

Wüster, E. (1967b). New monolingual glossaries (XVI). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 13*(2), 124-127.

Wüster, E. (1967c). New monolingual glossaries (XVII). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 13*(3), 192-193.

Wüster, E. (1968a). Letter symbols for languages. Basic symbols and additional elements (J. C. Sager & I. Wilson, Trans.). *Babel, 14*(2), 92-102. (Original work published 1968).

Wüster, E. (1968b). *The machine tool: An interlingual dictionary of basic concepts. English-French master volume - Dictionnaire multilingue de la machine outil: Notions fondamentales. Volume de base anglais-français* (1rst ed.). London: Technical Press.

Wüster, E. (1968c). New monolingual glossaries. Second series List No.1. *Babel, 14*(2), 117-127.

Wüster, E. (1968d). New monolingual glossaries. Second series List No.2. *Babel, 14*(3), 184-190.

Wüster, E. (1968e). New monolingual glossaries. Second series List No.3. *Babel, 14*(4), 238-240.

Wüster, E. (1969a). New monolingual glossaries. Second series List No.4. *Babel, 15*(1), 52-55.

Wüster, E. (1969b). New monolingual glossaries. Second series List No.5. *Babel, 15*(2), 116-122.

Wüster, E. (1969c). New monolingual glossaries. Second series List No.6. *Babel, 15*(3), 178-184.

Wüster, E. (1969d). New monolingual glossaries. Second series List No.7. *Babel, 15*(4), 231-239.

Wüster, E. (1970a). *Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik. (Die nationale Sprachnormung und ihre Verallgemeinerung)* (3rd ed.). Bonn: Bouvier.

Wüster, E. (1970b). New monolingual glossaries. Second series List No.8. *Babel, 16*(1), 51-57.

Wüster, E. (1970c). New monolingual glossaries. Second series List No.9. *Babel, 16*(2), 92-104.

Wüster, E. (1970d). New monolingual glossaries. Second series List No.10. *Babel, 16*(3), 156-163.

Wüster, E. (1970e). New monolingual glossaries. Second series List No.11. *Babel, 16*(4), 219-231.

Wüster, E. (1971a). New monolingual glossaries. Second series List No.12. *Babel, 17*(1), 41-51.

Wüster, E. (1971b). New monolingual glossaries. Second series List No.13. *Babel, 17*(2), 33-42.

Wüster, E. (1971c). New monolingual glossaries. Second series List No.14. *Babel, 17*(3), 34-43.

Wüster, E. (1971d). New monolingual glossaries. Second series List No.15. *Babel, 17*(4), 25-48.

Wüster, E. (1972a). New monolingual glossaries. Second series List No.16. *Babel, 18*(1), 46-55.

Wüster, E. (1972b). New monolingual glossaries. Second series List No.17. *Babel, 18*(2), 47-54.

Wüster, E. (1972c). New monolingual glossaries. Second series List No.18. *Babel, 18*(3), 37-53.

Wüster, E. (1972d). New monolingual glossaries. Second series List No.19. *Babel, 18*(4), 37-46.

Wüster, E. (1973). New monolingual glossaries. Second series List No.20. *Babel, 19*(1), 47-55.

Wüster, E. (1974a). *The road to Infoterm: Two reports prepared on behalf of Unesco* (Vol. 1 Infoterm Series). Pullach/München: Verlag Dokumentation.

Wüster, E. (1974b). Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften. *Linguistics, 119*(1), 61-106.

Wüster, E. (1976a). La théorie générale de la terminologie - un domaine interdisciplinaire impliquant la linguistique, la logique, l'ontologie, l'informatique et les sciences des objets (Trans.). In H. Dupuis (Ed.), *Essai de définition de la terminologie. Actes du colloque international de terminologie* (pp. 49-57). Québec: Régie de la Langue Française. (Original work published 1974).

Wüster, E. (1976b). International activity in terminology: 75 years of research - foundations and challenge for the rest of the century. In *International co-operation in terminology - Coopération internationale en terminologie. Proceedings of the first Infoterm Symposium* (Vol. 3 Infoterm Series, pp. 32-36). München: Verlag Dokumentation.

Wüster, E. (1976c). L'activité internationale en terminologie: 75 années de recherches - base et défi pour le reste du siècle. In *International co-operation in terminology - Coopération internationale en terminologie. Proceedings of the first Infoterm Symposium* (Vol. 3 Infoterm Series, pp. 37-41). München: Verlag Dokumentation.

Wüster, E. (1976d). Standardized terminologies. In C. Butler & R. Hartmann (Eds.), *A reader on language variety* (Vol. 1, pp. 21-31). Exeter: University of Exeter.

Wüster, E. (1977). International filing rules. *International Forum on Information and Documentation, 2*(2), 18-29.

Wüster, E. (1979a). *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (1^{rst} ed.). Vienna: Springer.

Wüster, E. (1979b). La théorie générale de la terminologie (I). (G. Lurquin, Trans.). *Le Langage et l'Homme, 14*(2), 59-71. (Original work published 1974).

Wüster, E. (1979c). La théorie générale de la terminologie (II). (G. Lurquin, Trans.). *Le Langage et l'Homme, 14*(3), 59-72. (Original work published 1974).

Wüster, E., Felber, H., Krommer-Benz, M., & Manu, A. (1979). *International bibliography of standardized vocabulaires - Bibliographie internationale de vocabulaires normalisés - Internationale Bibliographie der Normwörterbücher* (2nd enlarged and completely revised ed. Vol. 2 Infoterm Series). München: K.G.Saur Verlag.

Wüster, E. (1980). Introduction (Fragment of a draft). *International Journal of the Sociology of Language, 23*, 15.

Wüster, E. (1981). L'étude scientifique générale de la terminologie, zone frontalière entre la linguistique, la logique, l'ontologie, l'informatique et les sciences des choses (Bureau des traductions du Secrétariat d'État du Canada Trans.). In V. I. Siforov, G. Rondeau & H. Felber (Eds.), *Textes choisis de terminologie* (Vol. 1 Fondements théoriques de la terminologie, pp. 55-114). Québec: Girsterm - Université Laval. (Original work published 1974).

Wüster, E. (1982). Exposé illustré et terminologique de la nomination du monde (Bureau de traductions de Canada Trans.). In G. Rondeau (Ed.), *Travaux de terminologie* (Vol. 2, pp. 25-76). Québec: Girsterm - Université Laval. (Original work published 1959-1960).

Wüster, E. (1985a). *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (2nd ed.). Copenhagen: Fachsprachlichen Zentrum, Handelshochschule.

Wüster, E. (1985b). *Introduction à la théorie générale de la terminologie et à la lexicographie terminologique* (E. Brent, Trans.). Quebec: Girsterm - Université Laval. Unpublished manuscript. (Original work published 1979).

Wüster, E. (1985c). *Introduction to the general theory of terminology and terminological lexicography* (E. Brent & R. Alber-DeWolf, Trans.). Quebec: Girsterm - Université Laval; Secrétariat d'État; Gouvernement du Québec-Office de la langue française. Unpublished manuscript. (Original work published 1979).

Wüster, E. (1991). *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (3rd ed.). Bonn: Romanistischer Verlag.

Wüster, E. (1998). *Introducción a la teoría general de la terminología y a la lexicografía terminológica* (M. T. Cabré, (Ed.) & A.-C. Nokerman, Trans. 1ʳˢᵗ ed.). Barcelona: Universitat Pompeu Fabra. (Original work published 1979).

Wüster, E. (2001a). Bearbeitete Ausgabe von Teilen des "Machine Tool" (1968). [The machine tool - An interlingual dictionary of basic concepts]. In H. Picht & K.-D. Schmitz (Eds.), *Terminologie und Wissensordnung. Ausgewählte Schriften aus dem Gesamtwerk von Eugen Wüster* (pp. 207-256). Vienna: TermNet. (Excerpt reprinted from *Wüster, E. (1968). The machine tool. English-French master volume*. London: Technical Press).

Wüster, E. (2001b). The coming concentration of international terminology work. In H. Picht & K.-D. Schmitz (Eds.), *Terminologie und Wissensordnung. Ausgewählte Schriften aus dem Gesamtwerk von Eugen Wüster* (pp. 401-416). Vienna: TermNet. (Reprinted from Wüster, E. (1952). The coming concentration of international terminology work (Hans J. Eberstark, Trans). *Revue de la Documentation*, 19(1), 1-7). (Original work published 1951).

Wüster, E. (2003a). The wording of the world presented graphically and terminologically. (J. C. Sager, Trans.). *Terminology, 9*(2), 269-297. (Original work published 1959-1960).

Wüster, E. (2003b). *Introducción a la teoría general de la terminología y a la lexicografía terminológica* (M. T. Cabré, (Ed.) & A.-C. Nokerman, Trans. 2ⁿᵈ ed.). Barcelona: Universitat Pompeu Fabra. (Original work published 1979).

Wüster, E. (2004). The structure of the linguistic world of concepts and its representation in dictionaries. (J. C. Sager, Trans.). *Terminology, 10*(2), 281-306. (Original work published 1959).

Appendix B. Eugen Wüster's Annotated Bibliography

Appendix B. Eugen Wüster's Annotated Bibliography

This annotated bibliography gives a summary of Wüster's publications in English, French and Spanish. In addition to bibliographic data, it provides a concise description of each publication. It contains, for the most part, Wüster's translations, although some of his works in their original German are annotated here for reference purposes.

Wüster, E. (1923/1929). *Enciklopedia vortaro esperanta-germana, kun speciala elmontro de la Zamenjof-a lingvuzo - Enzyklopedisches Wörterbuch Esperanto-Deutsch mit besonderer Aufweisung des Zamenhof'schen Sprachebrauchs* (Vol. 1. A-K). Leipzig: Ferdinard Hirt & Son.

This encyclopedic dictionary is based on Zamenhof's idea of a 'Provisional Comprehensive Dictionary'. The encyclopedic dictionary catalogues the existing Esperanto lexicon. Entries are written in Esperanto and explained in German. Volume 1 consists of only four parts, published in 1923, 1925, 1926 and 1929 respectively. In the Preface, Wüster introduces his ideas on language policy. There is also a section where he describes how to use the dictionary. The section which deals with the principles of Esperanto studies focuses on the correctness and the quality of a term as well as the economy of language. The alphabetical lexicon is the last section. It ends on page 576 with the last word "korn-o". In all, it contains around 35,000 entries.

Wüster, E. (1931). *Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik. (Die nationale Sprachnormung und ihre Verallgemeinerung)* (1[rst] ed.). Berlin: VDI Verlag.

Wüster's thesis dissertation, [*International Language Standardization in Engineering with Special Reference to Electrical Engineering*], is considered a major work in the field of terminology. Wüster describes technical language (language for special purposes) from the perspective of an engineer and technician. He provides a scientific foundation for technical language standardization. In this work, he sets out the reasons for the systematization of terminology work, establishes the principles to be followed when working with terms, and outlines a methodology for the treatment of

terminological data. One third of this work deals with planned languages. There are three editions of this work; the 1st was published in Berlin in 1931; the 2nd in Bonn in 1966; and the 3rd again in Bonn in 1970. It was translated into Russian in 1935.

Wüster, E. (1952). The coming concentration of international terminology work (Hans J. Eberstark, Trans). *Revue de la Documentation, 19*(1), 1-7. (Original work published 1951).

The original article was published in 1951 in the Austrian journal *Oesterreischischer Maschinenmarkt und Elektrowirtschaft* (Vol. 6, No. 7). In this article, Wüster states that scientific and technical progress cannot be obtained through individual efforts, but only through a group effort by all nations. He reviews in detail work in international terminology, which, according to him, lead to the creation of four organizations: The International Organization for Standardization (ISO), The United Nations Educational, Scientific and Cultural Organization (UNESCO), The International Auxiliary Language Organization (IALA) and The International Federation for Documentation (F.I.D.). This article was reprinted in 2001 by Picht and Schmitz (see Wüster 2001).

Wüster, E. (1955a). *Bibliography of monolingual scientific and technical glossaries - Bibliographie de vocabulaires scientifiques et techniques monolingues* (Vol. I: National standards). Paris: UNESCO.

The word "glossaries" in the title means vocabulary or dictionary, and it includes any publication that lists a stock of terms appertaining to any given field of knowledge in any single language. This bibliography was designed to meet the need for unambiguous international intercommunication because "monolingual technical glossaries are in fact far more important … to elucidate the precise meaning of technical terms" (introduction p. 7). In the present volume, only standardized technical glossaries have been listed. The current glossaries represent all fields of knowledge, contain works published in 27 different languages and represent the standardizing organizations of many countries. Bibliographical references are grouped according to the Universal Decimal Classification (UDC) system. There is a larger number of bibliographic references in the applied sciences than in the natural sciences.

Wüster, E. (1955b). Standardization of technical terms - Problems and progress (UNESCO Trans.). *UNESCO document, Ref. 96/ 5915*, 13p. (Original work published 1955).

This is the English translation of a German article first published in 1955, in the German journal of applied linguistics *Sprachforum* (1955, Vol. 1, No. 1). The English translation was published by UNESCO, with limited distribution, on November 30, 1955. A French translation was also published in the journal *Revue de la Documentation* in 1959 (see Wüster, 1959a). In this article, Wüster gives general guidelines of terminology standardization, first, standardization of certain single terms; second, standardization of terminologies; finally, standardization of terminological principles on term formation and its representation in specialized dictionaries and vocabularies or glossaries. He stresses the important work done by ISO/TC 37- Terminology, the former International Organization for Standardization (ISA), and UNESCO in the publication of certain multilingual technical dictionaries. An excerpt of this report was also published in 1976 (see Wüster, 1976d).

Wüster, E. (1959a). La normalisation du langage technique. Problèmes et état actuel (E. Trofer, J. Lefevre, F. Lang, & R. Fisher-Mayenburg, Trans.). *Revue de la Documentation, 26*(2), 43-49. (Original work published 1955).

This is the French translation of the German article originally published in 1955, in the German journal of applied linguistics *Sprachforum* (1955, Vol. 1, No. 1). UNESCO distributed an English version of the article the same year that the original German version was published, in 1955, (see Wüster, 1955b).

Wüster, E. (1959b). *Bibliography of monolingual scientific and technical glossaries - Bibliographie de vocabulaires scientifiques et techniques monolingues* (Vol. II: Miscellaneous sources). Lausanne: UNESCO.

This second volume of the *Bibliography* is devoted to glossaries published by private organizations. It references glossaries in 26 languages. It has been structured along the same lines as Volume 1. The bibliography can be consulted in different ways since it contains three different indexes in alphabetic listings of subjects, authors, and languages. For every bibliographical entry, it includes a reference to the physical

location where the user can access the glossary. Most of the libraries listed as holding the glossaries are in Vienna, which is problematic for readers outside Austria.

Wüster, E. (1959c). New monolingual glossaries (I). Addenda to the Unesco bibliography of standardized monolingual scientific and technical glossaries. *Babel, 5*(4), 229-233.

Since the publication of Wüster's *Bibliography of Monolingual Scientific and Technical Glossaries*, Vol. 1 and Vol. 2, in 1955 and 1959 respectively, many new glossaries have appeared. The editorial board of *Babel,* the International Journal of Translation published by the International Federation of Translators (FIT), decided to provide readers with up-to-date references for new glossaries in the form of a supplement. Seventeen supplements listing new glossaries related to 9 branches of human knowledge were published between 1959 and 1967. All subject headings are presented in accordance with the UDC system. The following is a list of the complete references for the first series:

List I. *Babel* (1959), *5*(4), 229-233.

List II. *Babel* (1960), *6*(1), 38-40.

List III. *Babel* (1960), *6*(2), 92-94.

List IV. *Babel* (1961), *7*(1), 45-47.

List V. *Babel* (1961), *7*(4), 203-204.

List VI. *Babel* (1962), *8*(4), 212-214.

List VII. *Babel* (1964), *10*(4), 193-195.

List VIII. *Babel* (1965), *11*(1), 54-56.

List IX. *Babel* (1965), *11*(2), 95-98.

List X. *Babel* (1965), *11*(3), 142-146.

List XI. *Babel* (1965), *11*(4), 191-199.

List XII. *Babel* (1966), *12*(2), 125-128.

List XIII. *Babel* (1966), *12*(3), 173-176.

List XIV. *Babel* (1966), *12*(4), 221-224.

List XV. *Babel* (1967), *13*(1), 54-57.

List XVI. *Babel* (1967), *13*(2), 124-127.

List XVII. *Babel* (1967), *13*(3), 192-193.

Wüster, E. (1964a). Dictionaries and glossaries (Gaps: in languages; in disciplines). *UNESCO document, Ref. NS/Doc/WP/3.4*, 10p.

This is a working paper on Wüster's suggestions regarding gaps in scientific and technical dictionaries to which he added two annexes. Annex 1 is the outline of action concerning multilingual dictionaries and Annex 2 is the report on the work of technical committee ISO/TC37 Terminology (principles and coordination) for the year 1963. Based on the first discussion held in Paris in September 1961, by the International Advisory committee on Bibliography, Documentation and Terminology, as stated in Annex 1, Wüster suggested studying the ways in which UNESCO or other coordinating organizations could support dictionary research, research project funding and the dissemination of results.

Wüster, E. (1968a). Letter symbols for languages. Basic symbols and additional elements (J. C. Sager & I. Wilson, Trans.). *Babel, 14*(2), 92-102. (Original work published 1968).

In this article, Wüster deals with international language symbols. He gives a general overview of the basic letter symbols and the language formulas used to code or represent the names of languages and their variants. In the beginning, languages were represented by a single capital letter based on the first letter of their name in their native language to which additional elements were then added depending on the language. In this article, Wüster's suggestion was to use English language names in bibliographies so international readers could have fast access to the information. Organizations such as UNESCO and the ISO participated in the standardization of these symbols.

Wüster, E. (1968b). *The machine tool: An interlingual dictionary of basic concepts. English-French master volume - Dictionnaire multilingue de la machine outil: Notions fondamentales. Volume de base anglais-français* (1ʳˢᵗ ed.). London: Technical Press.

This project was carried out under the auspices of the UN, the Economic Commission of Europe (ECE) and the ISO between 1951 and 1968. The foreword was written by the Secretariat of UNESCO. There is also a section on the career of Dr. Eugen Wüster written by the Technical Press publisher. The book has two parts and is divided into eleven chapters. Part 1 contains information on the making of the dictionary and Part 2

explains how to use the dictionary and includes the dictionary itself. The *English-French Master Volume* contains 1401 basic concepts common to all or many machine tools. There is also a German supplement to the dictionary. The dictionary possesses a special feature; the layout is quite different from the layout adopted in most translation dictionaries. The compilers concluded that this single volume just scratches the surface of the vast field of technical terminology.

Wüster, E. (1968c). New monolingual glossaries. Second series List No.1. *Babel, 14*(2), 117-127.

This publication marks the beginning of the second series of New Monolingual Glossaries (Wüster, 1959c). Two German periodicals, *Din-Mitteilungen* and *Lebende Sprachen*, would also publish these supplements. This series introduces layout changes and new features in the use of symbols that differ from the first series. All changes are explained in the introduction. The following is a list of the complete references for the twenty supplements that make up the second series:

List No.1. *Babel* (1968), *14*(2), 117-127.
List No.2. *Babel* (1968), *14*(3), 184-190.
List No.3. *Babel* (1968), *14*(4), 238-240.
List No.4. *Babel* (1969), *15*(1), 52-55.
List No.5. *Babel* (1969), *15*(2), 116-122.
List No.6. *Babel* (1969), *15*(3), 178-184.
List No.7. *Babel* (1969), *15*(4), 231-239.
List No.8. *Babel* (1970), *16*(1), 51-57.
List No.9. *Babel* (1970), *16*(2), 92-104.
List No.10. *Babel* (1970), *16*(3), 156-163.
List No.11. *Babel* (1970), *16*(4), 219-231.
List No.12. *Babel* (1971), *17*(1), 41-51.
List No.13. *Babel* (1971), *17*(2), 33-42.
List No.14. *Babel* (1971), *17*(3), 34-43.
List No.15. *Babel* (1971), *17*(4), 25-48.
List No.16. *Babel* (1972), *18*(1), 46-55.

List No.17. *Babel* (1972), *18*(2), 47-54.

List No.18. *Babel* (1972), *18*(3), 37-53.

List No.19. *Babel* (1972), *18*(4), 37-46.

List No.20. *Babel* (1973), *19*(1), 47-55.

Wüster, E. (1974a). *The road to Infoterm: Two reports prepared on behalf of Unesco* (Vol. 1 Infoterm Series). Pullach/München: Verlag Dokumentation.

This book consists of two reports prepared on behalf of UNESCO. The first report, Inventory of Sources of Scientific and Technical Terminology, presents a selective survey of current terminological activities and of existing terminological bibliographies and publications. In the second report, Plan for Establishing an International Information Centre (Clearinghouse) for Terminology, Wüster examines the potential tasks of an information center for terminology and terminological lexicography. He also discusses the potential users and collaborators of the center as well as divers bodies with which it could co-ordinate. These reports were submitted to UNESCO in 1971 and resulted in the creation of Infoterm in Vienna in September 1971. Since Infoterm wanted to make their results available to readers, the center decided to issue a series of publications of which *The Road to Infoterm* was the first volume.

Wüster, E. (1974b). Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften. *Linguistics, 199*(1), 61-106.

This paper was presented at the AILA: Third International Congress of Applied Linguistics held in Copenhagen, 21st – 26th August, 1972, and published in 1974. This article was translated several times into French (see Wüster 1976, 1979, and 1981 for the description).

Wüster, E. (1976a). La théorie générale de la terminologie - un domaine interdisciplinaire impliquant la linguistique, la logique, l'ontologie, l'informatique et les sciences des objets (Trans.). In H. Dupuis (Ed.), *Essai de définition de la terminologie. Actes du colloque international de terminologie* (pp. 49-57). Québec: Régie de la Langue Française. (Original work published 1974).

In this colloquium, held in Quebec, Canada, in 1975, Wüster presented a paper on the general theory of terminology based on his German article "Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften" (Wüster, 1974b). The proceedings were published in 1976, and just part of the original article, as a French translation, appeared in this publication. It contains excerpts of the first five sections (out of six) of the original text. A footnote states that a complete version of this French translation was being prepared for publication. That translation was then published in Quebec, Canada, in 1981; two years after another complete French translation appeared in 1979, in Brussels, Belgium (see Wüster, 1979b and 1979c).

Wüster, E. (1976b). International activity in terminology: 75 years of research - foundations and challenge for the rest of the century. In *International co-operation in terminology - Coopération internationale en terminologie. Proceedings of the first Infoterm Symposium* (Vol. 3 Infoterm Series, pp. 32-36). München: Verlag Dokumentation.

This is the opening of the First Infoterm Symposium held in Vienna on April 9, 1975. Wüster focused this preliminary presentation on a brief tribute to "four dynamic and forward-looking men" who, during the first half of the century, fostered the development of terminology: the German Alfred Schlomann, the Frenchman Ferdinand de Saussure, the Russian Ernst Dresen, and the Englishman John Edwin Holmstrom. He concludes the article with a short parallel between linguistics and terminology, stressing the "linguistic importance of the process involved in the conscious creation of terminology" (Wüster, 1976b, p.35) as stressed by the German linguist Leo Weisgerber. Linguists and terminologists do not interact, but neither group is to be blamed especially since applied linguistics was not recognized as a field in the first half of the century and subject specialists did not consider linguistics to be very useful to them.

Wüster, E. (1976c). L'activité internationale en terminologie: 75 années de recherches - base et défi pour le reste du siècle. In *International co-operation in terminology - Coopération internationale en terminologie. Proceedings of the first Infoterm Symposium* (Vol. 3 Infoterm Series, pp. 37-41). München: Verlag Dokumentation.

This is the French version of the First Infoterm Symposium opening held in Vienna on April 9, 1975 (Wüster, 1976b for a description).

Wüster, E. (1976d). Standardized terminologies. In C. Butler & R. Hartmann (Eds.), *A reader on language variety* (Vol. 1, pp. 21-31). Exeter: University of Exeter.

This article is an excerpt from a report prepared by Wüster for UNESCO (Paris) in 1955, (see Wüster, 1955b and 1959a for a description).

Wüster, E. (1977). International filing rules. *International Forum on Information and Documentation, 2*(2), 18-29.

In this article, international filing rules refers to internationally mixed lists (words from several languages), and only those in the Latin alphabet. The filing system that follows the Latin alphabet is the same throughout the world but doubts only arise when filing words with special characters or when standardizing international filing rules for computer applications. For monolingual lists, national norms for filing rules apply more easily. Wüster examines these obstacles which prevent international rules from being accepted and suggests alphabetical filing rules for lists containing words from several different languages such as multilingual alphabetical dictionaries.

Wüster, E. (1979a). *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (1rst ed.). Vienna: Springer.

This posthumous book is based on Wüster's lectures (1972 to 1974) at the Institut für Sprachwissenschaft at the University of Vienna. Helmut Felber edited Wüster's teaching notes and published them in 1979, two years after Wüster's death. The textbook gives an overview of terminology work and lexicography. It had three German editions, the 2nd edition appearing in 1985 (Copenhagen: Fachsprachlichen Zentrum, Handelshochschule), and the 3rd edition appearing in 1991 (Bonn: Romanistischer

Verlag). The book was also translated for the first time into Spanish in 1998. A 2nd edition of this translation appeared in 2003. It has never been officially published in English or French, but two working translations prepared by the Secretary of State of Canada exist in Canada. The English and French translations were unofficially published in 1985.

Wüster, E. (1979b). La théorie générale de la terminologie (I). (G. Lurquin, Trans.). *Le Langage et l'Homme, 14*(2), 59-71. (Original work published 1974).

This French translation was published in two parts. Part one includes the overview of the general theory of terminology, its definition and its relationship to linguistics. (original Wüster, 1974b).

Wüster, E. (1979c). La théorie générale de la terminologie (II). (G. Lurquin, Trans.). *Le Langage et l'Homme, 14*(3), 59-72. (Original work published 1974).

Part two comprises terminology and its relationship to logics, ontology, computer science and special sciences. This second part completes the content of the general theory of terminology which Wüster considered a field closely related to linguistics, logics, ontology, computer science and special sciences. (original Wüster, 1974b).

Wüster, E., Felber, H., Krommer-Benz, M., & Manu, A. (1979). *International bibliography of standardized vocabulaires - Bibliographie internationale de vocabulaires normalisés - Internationale Bibliographie der Normwörterbücher* (2nd enlarged and completely revised ed. Vol. 2 Infoterm Series). München: K.G.Saur Verlag.

The first edition of this work appeared in 1955 and 1959 in two volumes under the title *Bibliography of Monolingual Scientific and Technical Glossaries*. This new edition, considerably increased, was prepared using automatic data processing under the initiative of the International Information Centre for Terminology (Infoterm). This bibliography indexes more than 11 000 standardized, monolingual and multilingual scientific and technical vocabularies. The references are classified systematically according to the Universal Decimal Classification (UDC) system. Titles are given in the original language and are transliterated when necessary, followed by their translation

into English or French. Each reference is supplemented by symbols characterizing the language, the nature and presentation of the vocabulary, and the organization where the document can be accessed in Austria. This is easy to verify because bibliography has a systematic table of headings according to the UDC system, a list of the fields of knowledge in English, French and German, and an index of organizations including a list of the books they have published.

Wüster, E. (1980). Introduction (Fragment of a draft). *International Journal of the Sociology of Language, 23*, 15.

Issue 23 of the *International Journal of the Sociology of Language* is a special issue on the Standardization of nomenclature. It was supposed to be edited by Juan Carlos Sager and Eugen Wüster. Unfortunately Wüster passed away before it was published. This one-page unfinished fragment of a draft briefly introduces the "two distinct and independent processes" that characterizes language planning: the linguistic aspect and the sociological aspect.

Wüster, E. (1981). L'étude scientifique générale de la terminologie, zone frontalière entre la linguistique, la logique, l'ontologie, l'informatique et les sciences des choses (Bureau des traductions du Secrétariat d'État du Canada Trans.). In V. I. Siforov, G. Rondeau & H. Felber (Eds.), *Textes choisis de terminologie* (Vol. 1 Fondements théoriques de la terminologie, pp. 55-114). Québec: Girsterm - Université Laval. (Original work published 1974).

This translation of Wüster's "Die allgemeine Terminologielehre - ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften" is seen by the editors of this collection as an article representing the fundamentals in the field of terminology between 1936 and 1981. Two other French translations appeared before 1981 (see Wüster 1976a and 1979b, 1979c).

Wüster, E. (1982). Exposé illustré et terminologique de la nomination du monde (Bureau de traductions de Canada Trans.). In G. Rondeau (Ed.), *Travaux de terminologie* (Vol. 2, pp. 25-76). Québec: Girsterm - Université Laval. (Original work published 1959-1960).

In this article, Wüster gives an account of the concept of meaning and presents the connections between concepts and linguistic signs. For this purpose the author pictures the process of naming the exterior world from different linguistic points of view inspired from linguists such as De Saussure, Meillet and Bühler among others. This is Wüster's philosophical and linguistic reflection on naming. A supplement was added to clarify the lack of reference to some authors in the original German article. The bibliography is faithfully reproduced; identical in appearance to the original text. This French version was published to honor Infoterm on its 10th anniversary. An English translation was to be published in 2003 (see Wüster, 2003).

Wüster, E. (1985b). *Introduction à la théorie générale de la terminologie et à la lexicographie terminologique* (E. Brent, Trans.). Quebec: Girsterm - Université Laval. Unpublished manuscript. (Original work published 1979).

This work is a French adaptation of Wüster's German book *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (1979) which is a textbook for beginners as the first word in the title indicates. It contains 9 chapters where Wüster deals with the differences between terminology and linguistics, linguistic signs, concepts and definitions, general and written signs, the relationship between concepts and linguistic signs, linguistic normalization, and finally terminography principles. The translator has added, from the original German version, updated notes by Helmut Felber, some new notes, a bibliography citing all possible works Wüster mentions, indexes of terms, authors and important topics, and 33 figures at the end of the text. This is the only unpublished French version of Wüster (1979a).

Wüster, E. (1985c). *Introduction to the general theory of terminology and terminological lexicography* (E. Brent & R. Alber-DeWolf, Trans.). Quebec: Girsterm - Université Laval; Secrétariat d'État; Gouvernement du Québec-Office de la langue française. Unpublished manuscript. (Original work published 1979).

This work is the English adaptation of Wüster's *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* (1979). Both *Forewords* in the French and the English versions were signed by the French translator, Edmond Brent, who was in contact with the person responsible for the English edition, Rosa Alber-DeWolf. Compared to the French version, the English translation does not have the general index of terminology terms and the 33 figures are placed at the beginning of the text. This is the only unpublished English version of Wüster (1979a).

Wüster, E. (1998). *Introducción a la teoría general de la terminología y a la lexicografía terminológica* (M. T. Cabré, (Ed.) & A.-C. Nokerman, Trans. 1rst ed.). Barcelona: Universitat Pompeu Fabra. (Original work published 1979).

This translation project was directed by Maria Teresa Cabré and coordinated by Mercè Lorente. The translator was Anne-Cécile Nokerman. It was conceptually revised by Maria Teresa Cabré and Alicia Fedor de Diego. This publication is part of the series *Monografies* published by the Institut Universitary de Lingüística Aplicada (IULA), Universitat Pompeu Fabra. In the *Preface*, Maria Teresa Cabré concentrates on the importance of Wüster's theory. The *Introduction*, written by Christian Galinski and Gerhard Budin, is a brief description of this work, historically and intellectually contextualized. The book has ten chapters, a bibliography and some figures. Compared to the English and French versions, it has 3 types of footnotes: the English translator's notes (Edmond Brent), the German editor's notes (Helmut Felber), and the Spanish edition's notes. The bibliography corresponds to the French edition. Finally, there are only 29 figures compared to 33 figures in the two other versions. A second edition was published in 2003.

Wüster, E. (2001a). Bearbeitete Ausgabe von Teilen des "Machine Tool" (1968). [The machine tool - An interlingual dictionary of basic concepts]. In H. Picht & K.-D. Schmitz (Eds.), *Terminologie und Wissensordnung. Ausgewählte Schriften aus dem Gesamtwerk von Eugen Wüster* (pp. 207-256). Vienna: TermNet. (Excerpt reprinted from *Wüster, E. (1968). The machine tool. English-French master volume*. London: Technical Press).

Some selected excerpts of Wüster's *The Machine Tool Dictionary* are reprinted in Picht and Schmitz (2001). In this excerpt, Picht and Schmitz reproduce 10 passages from the English part of the dictionary and one excerpt from the French part. They have also included a picture of the title page. Each section has its corresponding theme as follows: Chapter 1, History of the dictionary; Chapter 2, Lexicographical notes; Chapter 3, Bibliography; Chapter 4, How to use the dictionary and its supplements; Chapter 5, Symbols and abbreviations used in the dictionary; Chapter 6, Principal sections of the vocabulary; Chapter 7, The conceptual scheme of the vocabulary; Chapter 8, The vocabulary; Chapter 9, Layout of the indexes; Chapter 10, Index of English terms; and Chapter 11, Index des termes français.

Wüster, E. (2001b). The coming concentration of international terminology work. In H. Picht & K.-D. Schmitz (Eds.), *Terminologie und Wissensordnung. Ausgewählte Schriften aus dem Gesamtwerk von Eugen Wüster* (pp. 401-416). Vienna: TermNet. (Reprinted from Wüster, E. (1952). The coming concentration of international terminology work (Hans J. Eberstark, trans). *Revue de la Documentation*, 19(1), 1-7). (Original work published 1951).

The original paper was published in 1951, then an English translation was published in *Revue de la Documentation* in 1952 (see Wüster, 1952). Picht and Schmitz (2001) also reprinted this translation in *Terminologie und Wissensordnung*.

Wüster, E. (2003a). The wording of the world presented graphically and terminologically. (J. C. Sager, Trans.). *Terminology, 9*(2), 269-297. (Original work published 1959-1960). A first translation, into French, was published in 1982 (see Wüster, 1982). As read in the translator's note, the article was originally written as a tribute to the German linguist Leo Weisgerber, the first to recognize Wüster's work on terminology and its relevance for applied linguistics.

Wüster, E. (2004). The structure of the linguistic world of concepts and its representation in dictionaries. (J. C. Sager, Trans.). *Terminology, 10*(2), 281-306. (Original work published 1959). This lecture was given to translators at the 3rd Congress of the International Federation of Translators (FIT) held in Bad Godesberg in 1959. In it, Wüster deals with concept systems and addresses its importance for systematic dictionary structures. In a systematic dictionary the sequence of entries comes "not according to the alphabet, but according to the meaning — the so-called systematic sequence" (p. 296). He discusses the theoretical and practical issues involved in systematized dictionaries and vocabularies.

Appendix C. Corpus of Journal Articles

Appendix C. Corpus of Journal Articles (1979 to 2009)

ACTA (Autores Científicos-Técnicos y Académicos) (3)

1. Rodríguez Ortega, N., & Schnell, B. (2005a). La terminología: Historia y evolución de una disciplina [Electronic Version]. *ACTA*, *36*, 83-90. Retrieved March 14, 2007, from http://www.acta.es/articulos_mf/36081.pdf

2. Rodríguez Ortega, N., & Schnell, B. (2005b). La terminología: Panorama actual y cooperación internacional [Electronic Version]. *ACTA*, *37*, 11-25. Retrieved December 5, 2009, from http://www.acta.es/articulos_mf/37009.pdf

3. Schnell, B., & Rodríguez, N. (2005). La terminología: Nuevas perspectivas y futuros horizontes [Electronic Version]. *ACTA*, *38*, 47-54. Retrieved May 10, 2008, from http://www.acta.es/articulos_mf/38045.pdf

Banque des Mots - La (10)

1. Condamines, A. (1994). Terminologie et représentation des connaissances. *La Banque des Mots, 6*, 29-44.

2. Desmet, I., & Boutayeb, S. (1993). Terme et mot: Propositions pour la terminologie. *La Banque des Mots, 5*, 5-32.

3. Galinski, C. (1988). Situation et taches de la terminographie a l'usage des traducteurs. *La Banque des Mots*(Special issue), 31-40.

4. Humbley, J. (1989). Terminologie et conscience linguistique. *La Banque des Mots* (Special issue), 97-104.

5. Lerat, P. (1988). Terminologie et sémantique descriptive. *La Banque des Mots*(Special issue), 11-30.

6. Lerat, P. (1989). Les fondements théoriques de la terminologie. *La Banque des Mots*(Special issue), 51-62.

7. Lerat, P. (1995). Terme, mot, vocable. *La Banque des Mots, 7*, 5-9.

8. Otman, G. (1994). Pourquoi parler de connaissance terminologiques et de bases de connaissances terminologiques. *La Banque des Mots, 6*, 5-27.

9. Rastier, F. (1995). Le terme: Entre ontologie et linguistique. *La Banque des Mots, 7*, 35-65.

10. Slodzian, M. (1995). Comment revisiter la doctrine terminologique aujourd'hui. *La Banque des Mots, 7*, 11-18.

Cahiers du CIEL (2)

1. Candel, D. (2004). Wüster par lui-même. *Cahier du CIEL*, 15-31.

2. Humbley, J. (2004). La réception de l'œuvre d'Eugen Wüster dans les pays de langue française. *Cahier du CIEL*, 33-51.

Cahiers de Grammaire (1)

1. Condamines, A. (2000). Les bases théoriques du groupe toulousain "Sémantique et Corpus": Ancrages et perspectives. *Cahiers de Grammaire, 25*, 5-28.

Cahiers de la Documentation (1)

1. Felber, H. (1983). The general theory of terminology - A theoretical basis for information. *Cahiers de la Documentation, 37*(2/3), 85-91.

Cahiers de Linguistique Sociale (2)

1. Gambier, Y. (1991). Présupposés de la terminologie: Vers une remise en cause. *Cahiers de Linguistique Sociale, 18*, 31-58.

2. Guespin, L. (1991). La circulation terminologique et les rapports entre science, technique et production. *Cahiers de Linguistique Sociale, 18*, 59-79 [Reprint in Meta, 1995, 40(2), 206-215].

Cahiers du Rifal (former Terminologies Nouvelles) (3)

1. Aito, E. (2005). L'unité terminologique et les langues en voie de développement: Réflexions épistémologiques et ontologiques. *Cahiers du Rifal, 25*, 6-16.

2. Desmet, I. (2007). Terminologie, culture et société. Éléments pour une théorie variationniste de la terminologie et des langues de spécialité. *Cahiers du Rifal, 26*, 3-13.

3. Gaudin, F. (2007). Quelques mots sur la socioterminologie. *Cahiers du Rifal, 26*, 26-34.

Communication and Cognition (1)

1. Nedobity, W. (1988). Eugen Wüster et les critiques du langage du Cercle de Vienne. *Communication and Cognition, 21*(3-4), 399-410.

Debate Terminológico (2)

1. Cabré, M. T. (2003). La Terminología, una disciplina en evolución: Pasado, presente y algunos elementos de futuro [Electronic Version]. *Debate Terminológico*, *1*, 1-14. Retrieved February 29, 2008, from http://www.riterm.net/revista/n_1/cabre.pdf.

2. Monterde Rey, A. M. (2008). Relaciones conceptuales en el campo de la cerámica industrial: una experiencia docente con alumnos de terminología [Electronic Version]. *Debate Terminológico*, *4*, 1-16. Retrieved March 1, 2010, from http://riterm.net/revista/ojs/index.php/debateterminologico/article/viewFile/62/84

DELTA (1)

1. Adelstein, A., & Cabré, M. T. (2002). The specificity of units with specialized meaning: Polysemy as explanatory factor [Electronic Version]. *DELTA*, *18*, 1-25. Retrieved May 10, 2008, from http://www.scielo.br/pdf/delta/v18nspe/a0318spe.pdf

Dictionaries (1)

1. Nedobity, W. (1983). The general theory of terminology: A basis for the preparation of classified defining dictionaries. *Dictionaries, 5*, 69-75.

Fachsprache (4)

1. Bühler, H. (1980). General theory of terminology and its practical applications. A university course for translators. *Fachsprache, 2*(2), 50-54.

2. Felber, H. (1979). Theory of terminology, terminology work and terminology documentation. Interaction and world-wide development. *Fachsprache, 1*(1/2), 20-32.

3. Sager, J. C. (1981). Approaches to terminology and the teaching of terminology. *Fachsprache, 3*(3-4), 98-106.

4. Smith, V. (2001). Lexical non-arbitrariness and LSP translation: A causal model of explanation. *Fachsprache, 23*(1-2), 24-40.

Hermes (3)

1. Bergenholtz, H., & Kaufmann, U. (1997). Terminography and lexicography. A critical survey of dictionaries from a single specialised field. *Hermes, 18*, 91-125.

2. Humbley, J. (1997). Is terminology specialized lexicography? The experience of French-speaking countries. *Hermes, 18*, 13-31.

3. Temmerman, R. (1997). Questioning the univocity ideal. The difference between sociocognitive terminology and traditional terminology. *Hermes, 18*, 51-91.

Ikala (1)

1. Plested Álvarez, M. C., & Castrillón Cardona, E. R. (2004). Panorama de la terminologie (Colombie). *Íkala, 9*(15), 289-312.

International Classification (3)

1. Felber, H. (1980). Infoterm and TermNet. Plans, activities, achievements. *International Classification, 7*(3), 140-145.

2. Nedobity, W. (1985). Terminology and artificial intelligence. *International Classification, 12*(1), 17-19.

3. Nedobity, W. (1989). Concepts versus meaning as reflected by the works of E. Wüster and L. Wittgenstein. *International Classification, 16*(1), 24-26.

International Journal of Lexicography (1)

1. Van Campenhoudt, M. (2001). Pour une approche sémantique du terme et de ses équivalents [Electronic Version]. *International Journal of Lexicography*, *14*, 181-209. Retrieved August 17, 2006, from http://ijl.oxfordjournals.org/cgi/reprint/14/3/181.

International Journal of the Sociology of Language (4)

1. Felber, H. (1980a). In memory of Eugen Wüster, founder of the general theory of terminology. *International Journal of the Sociology of Language, 23*, 7-14.

2. Felber, H. (1980b). International standardization of terminology: Theoretical and methodological aspects. *International Journal of the Sociology of Language, 23*, 65-79.

3. Fiedler, S. (2006). Standardization and self-regulation in an international speech community: The case of Esperanto. *International Journal of the Sociology of Language, 177*, 67-90.

4. Johnson, R. L., & Sager, J. C. (1980). Standardization of terminology in a model of communication. *International Journal of the Sociology of Language, 23*, 81-104.

Journal of Biomedical Informatics (1)

1. Smith, B. (2006). From concepts to clinical reality: An essay on the benchmarking of biomedical terminologies. *Journal of Biomedical Informatics, 39*(3), 288-298.

Journal of Information Science (2)

1. Galinski, C. (1982). Ten years of Infoterm - activities and achievements. *Journal of Information Science, 5*, 103-114.

2. Nedobity, W. (1982). The relevance of terminologies for automatic abstracting. *Journal of Information Science, 4*, 161-165.

Langage et Société (1)

1. Condamines, A. (2008). Peut-on prévenir le risque langagier dans la communication écrite? [Electronic Version]. *Langage et Société*, *3*, 77-97. Retrieved October 31, 2009, from http://www.cairn.info/article.php?ID_REVUE=LS&ID_NUMPUBLIE=LS_125&ID_ART ICLE=LS_125_0077

Langages (9)

1. Budin, G. (2007). L'apport de la philosophie autrichienne au développement de la théorie de la terminologie: Ontologie, théories de la connaissance et de l'objet. *Langages, 4*(168), 11-23.

2. Candel, D. (2007). Terminologie de la terminologie. Métalangage et reformulation dans l'*Introduction à la terminologie générale et à la lexicographie terminologique* d'E. Wüster. *Langages, 4*(168), 66-81.

3. Condamines, A. (2005). Linguistique de corpus et terminologie. *Langages, 39*(157), 36-47.

4. Corbeil, J.-C. (2007). Le rôle de la terminologie en aménagement linguistique: Genèse et description de l'approche québécoise. *Langages, 4*(168), 92-105.

5. Gaudin, F. (2005). La socioterminologie. *Langages, 39*(157), 80-92.

6. Humbley, J. (2007). Vers une réception plurielle de la théorie terminologique de Wüster: Une lecture commentée des avant-propos successifs du manuel *Einführung in die allgemeine Terminologielehre. Langages, 4*(168), 82-91.

7. Lerat, P. (1990). L'hyperonymie dans la structuration des terminologies. *Langages, 25*(98), 79-86.

8. Roche, C. (2005). Terminologie et ontologie. *Langages, 39*(157), 48-62.

9. Savatovsky, D. (2007). Le Vocabulaire philosophique de Lalande (1902-1923): Lexicographie spécialisée ou prototerminographie? *Langages, 4*(168), 39-52.

Language Problems & Language Planning (2)

1. Blanke, D. (1987). The term "Planned Language". *Language Problems & Language Planning, 11*(3), 335-349.

2. Blanke, D. (2003). Interlinguistics and Esperanto studies. Paths to the scholarly literature. *Language Problems & Language Planning, 28*(2), 155-192.

Language Today (1)

1. Kingscott, G. (1998). Tribute to the founder of terminology: 1998 marks the centenary of Eugen Wüster's birth. *Language Today, 11*, 14-19.

Langage et l'Homme - Le (5)

1. Gambier, Y. (1993). Vers une histoire sociale de la terminologie. *Le Langage et l'Homme, 28*(4), 233-246. [Reprint in M. Snell-Hornby, F. Pöchhacker & K. Kaindl (Eds.) (1994). *Translation studies: An interdiscipline* (pp. 1255-1266). Amsterdam/Philadelphia: John Benjamins.].

2. Gaudin, F. (1993). Socioterminologie: Propos et propositions épistémologiques. *Le Langage et l'Homme, 28*(4), 247-257.

3. Guespin, L. (1993). Normaliser or standardiser? *Le Langage et l'Homme, 28*(4), 213-222.

4. Lurquin, G. (1979). In memoriam Eugen Wüster - Introduction. *Le Langage et l'Homme, 40*(2), 55-58.

5. Slodzian, M. (1993). La V.G.T.T. (Vienna General Theory of Terminology) et la conception scientifique du monde. *Le Langage et l'Homme, 28*(4), 223-232.

Lenguaje (1)

1. Lager, E., Rodríguez, E., & Vergara, O. (2006). La definición en la terminología académica de la Universidad del Valle. *Lenguaje, 34*, 125-157.

Letras de Hoje (1)

1. Gabrielatos, C., & Sarmento, S. (2006). Central modals in an aviation corpus: Frequency and distribution. *Letras de Hoje, 41*(2), 215-240.

LSP & Professional Communication (8)

1. Antia, B. E. (2002). Wüster and (applied) linguistics research. [Review of the book *Terminologie und Wissensordnung. Ausgewählte Schriften aus dem Gesamtwerk von Eugen Wüster* edited by Heribert Picht & Klaus-Dirk Schmitz] [Electronic Version]. *LSP & Professional Communication*, *2*, 102 -111. Retrieved July 3, 2005, from http://rauli.cbs.dk/index.php/LSP/article/viewFile/1948/1951

2. Dury, P. (2005). Terminology and specialized translation: The relevance of the diachronic approach [Electronic Version]. *LSP & Professional Communication 5*, 31-41. Retrieved March 17, 2010, from http://rauli.cbs.dk/index.php/LSP/article/viewFile/2042/2042

3. Galinski, C. (2003). International terminology associations and standardization - Infoterm, TermNet, ISO/TC 37 [Electronic Version]. *LSP & Professional Communication*, *3*, 111-118. Retrieved March 17, 2010, from http://rauli.cbs.dk/index.php/LSP/article/viewFile/2005/2005

4. Järvi, O. (2002). News graphics: Some typological and textual aspects [Electronic Version]. *LSP & Professional Communication*, *2*, 8-22. Retrieved March 17, 2010, from http://rauli.cbs.dk/index.php/LSP/article/viewFile/1958/1960

5. Monterde Rey, A. M. (2004). Evolución de modelos de formas de representación del conocimiento a nivel terminológico: Propuesta de un modelo actual [Electronic Version]. *LSP & Professional Communication*, *4*, 49-68. Retrieved March 17, 2010, from http://rauli.cbs.dk/index.php/LSP/article/viewFile/2015/2015

6. Myking, J. (2001). Sign models in terminology: Tendencies and functions [Electronic Version]. *LSP & Professional Communication*, *1*, 45-62. Retrieved March 17, 2010, from http://rauli.cbs.dk/index.php/LSP/article/viewFile/1924/1927

7. Resche, C. (2007). Human Capital: L'avers et le revers d'un terme métaphorique [Electronic Version]. *LSP & Professional Communication*, *7*, 23-48. Retrieved March 17, 2010, from http://rauli.cbs.dk/index.php/LSP/article/viewFile/2104/2103

8. Smith, V. (2003). Talking about motion in Danish, French, and Russian: Some implications for LSP in theory and practice [Electronic Version]. *LSP & Professional Communication*, *3*, 66-91. Retrieved March 17, 2010, from http://rauli.cbs.dk/index.php/LSP/article/viewFile/2002/2002

Meta (30)

1. Antia, B. E., Budin, G., Picht, H., Rogers, M., Schmitz, K.-D., & Wright, S. E. (2005). Shaping translation: A view from terminology research [Electronic Version]. *Meta*, *50*. Retrieved September 26, 2009, from http://id.erudit.org/iderudit/019907ar

2. Bagge, C. (1983). Analyse sémantique comparative des structures des vocabulaires scientifiques anglais et français. *Meta, 28*(4), 391-399.

3. Bononno, R. (2000). Terminology for translators - an implementation of ISO 12620. *Meta, 45*(4), 646-669.

4. Boulanger, J. C. (1995). Présentation: Images et parcours de la socioterminologie. *Meta, 40*(2), 194-205.

5. Bouveret, M. (1998). Approche de la dénomination en langue spécialisée. *Meta, 43*(3), 1-18.

6. Bühler, H. (1982). General theory of terminology and translation studies. *Meta, 27*(4), 425-431.

7. Cabré, M. T. (1991). Terminologie ou terminologies? Spécialité linguistique ou domaine interdisciplinaire? *Meta, 36*(1), 55-63.

8. Castro-Prieto, M. R., & Olvera-Lobo, M. D. (2007). Panorama intelectual de la terminología a través del análisis de redes sociales. *Meta, 52*(4), 816-838.

9. Draskau, J. (1991). Some reflections on "Equivalence"/"Äquivalenz" as a term and a concept in the theory of translation. *Meta, 36*(1), 269-274.

10. Freixa, J., Fernández Silva, S., & Cabré, M. T. (2008). La multiplicité des chemins dénominatifs. *Meta, 53*(4), 731-747.

11. Gerzymisch-Arbogast, H. (2001). Equivalence parameters and evaluation. *Meta, 46*(2), 228-242.

12. Gomes, H. E., & De Almeida Campos, M. L. (1996). Systematic aspects of terminology. *Meta, 41*(2), 247-254.

13. Gross, G., & Mathieu-Colas, M. (2001). Description de la langue de la médecine. *Meta, 46*(1), 68-81.

14. Guilloton, N. (1979). Le bon sens. *Meta, 24*(4), 471-477.

15. Heid, U., & Freibott, G. (1991). Collocations dans une base de données terminologique et lexicale. *Meta, 36*(1), 77-90.

16. Humbley, J. (1994). Quelques aspects de la datation de termes techniques: Le cas de l'enregistrement et de la reproduction sonores. *Meta, 39*(4), 701-715.

17. Kocourek, R. (1985). Terminologie et efficacité de la communication: Critères linguistiques. *Meta, 30*(2), 119-128.

18. Kocourek, R. (1991). Textes et termes. *Meta, 36*(1), 71-76.

19. Königs, F. G. (1986). Recherches en traductologie en République fédérale d'Allemagne: Tendances et perspectives. *Meta, 31*(2), 119-136.

20. Larivière, L. (1989). Vers un produit unifié en terminologie et en documentation: Le thésaurus terminologique. *Meta, 34*(3), 457-467.

21. Lethuillier, J. (1980). Les "bibles" du traducteur technique. *Meta, 25*(1), 101-110.

22. L'Homme, M.-C. (2005). Sur la notion de "terme". *Meta 50*(4), 1112-1132.

23. Manu, A. (1980). Infoterm et le réseau de terminologie TermNet. *Meta, 25*(1), 196-205.

24. Pavel, S. (1987). La terminologie de l'avenir: Un dialogue *Homo Sentiens-Machina Sapiens*. *Meta, 32*(2), 124-129.

25. Reboul, S. (1995). Télématique et socioterminologie. *Meta 40*(2), 296-307.

26. Resche, C. (2000a). Equivocal economic terms or terminology revisited. *Meta, 45*(1), 158-173.

27. Resche, C. (2000b). An approach to interface terminology: The example of environmental economics in English as a foreign language. *Meta, 45*(4), 628-645.

28. Rondeau, G. (1980). Terminologie et documentation. *Meta, 25*(1), 152-170.

29. Schulz, J. (1980). A terminology data bank for translators (TEAM). *Meta, 25*(2), 211-229.

30. Velásquez, G. (2002). La traducción y la terminología en la comunicación bilingüe mediada. *Meta, 47*(3), 444-459.

Panace@ (5)

1. Balliu, C. (2001). El peligro de la terminología en traducción médica [Electronic Version]. *Panace@, 2*, 30-39. Retrieved January 23, 2010, from http://medtrad.org/panacea/IndiceGeneral/n4_PeligroTerminologia.pdf

2. Barona, J. L. (2004). Hacer ciencia de la salud: Los diagnósticos y el conocimiento científico de las enfermedades [Electronic Version]. *Panace@, 5*, 37-44. Retrieved January 12, 2010, from http://medtrad.org/panacea/IndiceGeneral/n15_tribuna-Barona.pdf

3. Díaz Rojo, J. A. (2001). La terminología médica: Diversidad, norma y uso [Electronic Version]. *Panace@, 2*, 40-46. Retrieved January 11, 2006, from http://www.medtrad.org/panacea/IndiceGeneral/n4_TerminologiaMedica.pdf

4. Gentile, A. M. (2007). La enseñanza de la traducción científica en el contexto universitario argentino [Electronic Version]. *Panace@, 8*, 188-192. Retrieved December 10, 2009, from http://medtrad.org/panacea/IndiceGeneral/n26_tribuna-Gentile.pdf

5. Sevilla Muñoz, J. (2003). El proceso traductológico de *La traduction scientifique et technique* en español [Electronic Version]. *Panace@, 4(12)*, 153-159. Retrieved May 30, 2007, from http://www.medtrad.org/panacea/IndiceGeneral/n12_tribuna_SMunoz.pdf

QUARK (1)

1. Martí, J. (2004). Terradas y su contribución a la terminología científica. *QUARK, 31*, 95-103.

Revue Française de Linguistique Appliquée (5)

1. Cabré, M. T. (2009). La teoría comunicativa de la terminología, una aproximación lingüística a los términos [Electronic Version]. *Revue Française de Linguistique Appliquée*, *14*, 9-15. Retrieved July 12, 2010, from http://www.cairn.info/revue-francaise-de-linguistique-appliquee-2009-2-page-9.htm

2. Condamines, A. (2007). L'interprétation en sémantique de corpus: Le cas de la construction de terminologies [Electronic Version]. *Revue Française de Linguistique Appliquée*, *1*, 39-52. Retrieved October 31, 2009, from http://www.cairn.info/article.php?ID_REVUE=RFLA&ID_NUMPUBLIE=RFLA_121&ID_ARTICLE=RFLA_121_0039

3. Dury, P., & Picton, A. (2009). Terminologie et diachronie: Vers une réconciliation théorique et méthodologique? [Electronic Version]. *Revue Française de Linguistique Appliquée*, *14*, 31-41. Retrieved July 12, 2010, from http://www.cairn.info/revue-francaise-de-linguistique-appliquee-2009-2-page-31.htm

4. Lervad, S. (2009). Recherche en terminologie et applications pratiques: Quelques axes de collaboration avec des partenaires industriels danois [Electronic Version]. *Revue Française de Linguistique Appliquée*, *14*, 73-80. Retrieved July 12, 2010, from http://www.cairn.info/article_p.php?ID_ARTICLE=RFLA_142_0073

5. Petit, G. (2001). L'introuvable identité du terme technique [Electronic Version]. *Revue Française de Linguistique Appliquée*, *6*, 63-79. Retrieved October 31, 2009, from http://www.cairn.info/article.php?ID_REVUE=RFLA&ID_NUMPUBLIE=RFLA_062&ID_ARTICLE=RFLA_062_0063

Sémiotiques (1)

1. Humbley, J. (1996). La légitimation en terminologie. *Sémiotiques, 11*, 119-136.

Sendebar (3)

1. Cabré, M. T., & Estopá, R. (2002). El conocimiento especializado y sus unidades de representacion: Diversidad congnitiva. *Sendebar, 13*, 141-154.

2. Cabré, M. T., Feliu, J., & Tebé, C. (2001). Bases cognitivas de la terminología: Hacia una visión comunicativa del concepto. *Sendebar 12*, 301-310.

3. Fedor de Diego, A. (1995). El aporte de la terminología al desarrollo de las habilidades del pensamiento. *Sendebar, 6*, 175-184.

Terminologie et Traduction (5)

1. Brøns, U. (1987). Aspects of lexical meaning in language for special purposes and terminology with special reference to translation. *Terminologie et Traduction, 1*, 19-28.

2. Felber, H., Galinski, C., Hofstädler, H., Nebodity, W., & Schöndorfer, U. (1986). Preparation of the terminological data contained in E. Wüster's dictionary "The Machine Tool" for input into EURODICAUTOM. *Terminologie et Traduction, 3*, 29-43.

3. Felber, H., Manu, A., & Nedobity, W. (1987). Standardized vocabularies: Preparation - structure - function. *Terminologie et Traduction, 1*, 49-102.

4. Galinski, C., & Nebodity, W. (1990). International terminology standardization. *Terminologie et Traduction, 1*, 23-34.

5. Grinsted, A. (1997). The European Association for Terminology. *Terminologie et Traduction, 2*, 117-123.

Terminologies Nouvelles (later Cahiers du Rifal) (9)

1. Abbas, Y., & Picard, M.-L. (1998/1999). Exemple de pratique terminographique en entreprise. *Terminologies Nouvelles, 19*, 124-131.

2. Aito, E. (2000). Terminologie, dénomination et langues minoritaires face à la modernité: Vers une interrogation soucieuse du social. *Terminologies Nouvelles, 21*, 46-51.

3. Bourigault, D., & Slodzian, M. (1998/1999). Pour une terminologie textuelle. *Terminologies Nouvelles, 19*, 29-32.

4. Boutayeb, S., & Fantapié, A. (1997). De la terminologie à la dictionnairique: Contributions à l'acquisition de connaissances autour des langues. *Terminologies Nouvelles, 17*, 5-13.

5. Cabré, M. T. (2000). Terminologie et linguistique: La théorie des portes. *Terminologies Nouvelles, 21*, 10-15.

6. Humbley, J. (1998). Terminotique et documentation. *Terminologies Nouvelles, 18*, 3-4.

7. Moos, R. (1995). La terminologie en germanophonie: Vent nouveau sur la collaboration. *Terminologies Nouvelles, 14*, 63-65.

8. Mustafa el Hadi, W. (2000). Penser les nouvelles fonctionnalités du thesaurus. *Terminologies Nouvelles, 21*, 65-70.

9. Temmerman, R. (2000). Une théorie réaliste de la terminologie: Le sociocognitivisme. *Terminologies Nouvelles, 21*, 58-64.

Terminology (16)

1. Barrière, C. (2004). Building a concept hierarchy from corpus analysis. *Terminology, 10*(2), 241-263.

2. Cabré, M. T. (1995). On diversity and terminology. *Terminology, 2*(1), 1-16.

3. Cabré, M. T. (1998/1999). Do we need an autonomous theory of terms? *Terminology, 5*(1), 5-19.

4. Cabré, M. T. (2000). Elements for a theory of terminology: Towards an alternative paradigm. *Terminology, 6*(1), 35–57.

5. Cabré, M. T. (2003). Theories of terminology: Their description, prescription and explanation. *Terminology, 9*(2), 163–199.

6. Desmet, I., & Boutayeb, S. (1994). Terms and words: Propositions for terminology. *Terminology, 1*(2), 303-325.

7. Ferrari, L. (2002). ¿Un caso de polisemia en el discurso jurídico? *Terminology, 8*(2), 221-244.

8. Gómez González-Jover, A. (2006). Meaning and anisomorphism in modern lexicography. *Terminology, 12*(2), 215-234.

9. Lara, L. F. (1998/1999). "Concepts" and term hierarchy. *Terminology, 5*(1), 59-76.

10. L'Homme, M.-C. (2006). The processing of terms in dictionaries: New models and techniques. A state of the art. *Terminology, 12*(2), 181-188.

11. L'Homme, M.-C., Heid, U., & Sager, J. C. (2003). Terminology during the past decade (1994–2004): An Editorial statement. *Terminology, 9*(2), 151–161.

12. Messineo, C. (2002). Variación conceptual y formal del término educación bilingüe intercultural (ebi) en distintos tipos de discursos. *Terminology, 8*(1), 113-139.

13. Rey, A. (1998/1999). Terminology between the experience of reality and the command of signs. *Terminology, 5*(1), 121-134.

14. Sager, J. C. (1994). What's wrong with 'terminology work' and 'terminology science'? *Terminology, 1*(2), 375-381.

15. Sager, J. C. (1998). In search of a foundation: Towards a theory of the term. *Terminology, 5*(1), 41-57.

16. Temmerman, R. (1998/1999). Why traditional terminology impedes a realistic description of categories and terms in the life sciences. *Terminology, 5*(1), 77-92.

Terminology Standardization and Harmonization (1)

1. Gajdos, M., & Felber, H. (1998). 100th Anniversary Eugen Wüster. *Terminology Standardization and Harmonization, 10*(1-4), 4-10.

Terminology Science & Research (17)

1. Alexeeva, L. (2003). Interaction of terminology and philosophy. *Terminology Science & Research, 14*, 61-70. [Reprinted in Budin, G., Laurén, C., Picht, H., Pilke, N., Rogers, M., & Toft, B. (Eds.). (2006). *The theoretical foundations of terminology comparison between Eastern Europe and the Western countries. Proceedings of the Colloquium Comparison of the Theoretical Foundations of Terminology in Eastern Europe and the Western Countries* (pp. 9-19). Würzburg: Ergon Verlag].

2. Budin, G. (1997). Theoretical and operational problems of semiotic models in terminology theory. *Terminology Science & Research, 8*(1-2), 79-83.

3. Budin, G. (2001). A critical evaluation of the state-of-the-art of terminology theory. *Terminology Science & Research, 12*(1-2), 7-23.

4. Budin, G. (2003). Prospects of a philosophy of terminology. *Terminology Science & Research, 14*, 71-80. [Reprinted in Budin, G., Laurén, C., Picht, H., Pilke, N., Rogers, M., & Toft, B. (Eds.). (2006). *The theoretical foundations of terminology comparison between Eastern Europe and the Western countries. Proceedings of the Colloquium Comparison of the Theoretical Foundations of Terminology in Eastern Europe and the Western Countries* (pp. 21-31). Würzburg: Ergon Verlag].

5. Cabré, M. T. (2003). Terminology and philosophy: From logic to the philosophy of science. *Terminology Science & Research, 14*, 81-85. [Reprinted in Budin, G., Laurén, C., Picht, H., Pilke, N., Rogers, M., & Toft, B. (Eds.). (2006). *The theoretical foundations of terminology comparison between Eastern Europe and the Western countries. Proceedings of the Colloquium Comparison of the Theoretical Foundations of Terminology in Eastern Europe and the Western Countries* (pp. 33-37). Würzburg: Ergon Verlag].

6. Cabré, M. T., & Estopá, R. (2003). On the units of specialized meaning used in professional communication. *Terminology Science & Research, 14*, 15-27.

7. Järvi, O. (1997). The sign theories of Eugen Wüster and Charles S. Pierce as tools in research of graphical computer user interfaces. *Terminology Science & Research, 8*(1-2), 63-72.

8. Järvi, O. (2001). From precise terms to fuzzy words - from bad to worse in terminology science? *Terminology Science & Research, 12*(1-2), 85-88.

9. Leitchik, V. M., & Shelov, S. D. (2003). Some basic concepts of terminology: Traditions and innovations. *Terminology Science & Research, 14*, 86-101. [Reprinted in Budin, G., Laurén, C., Picht, H., Pilke, N., Rogers, M., & Toft, B. (Eds.). (2006). *The theoretical foundations of terminology comparison between Eastern Europe and the Western countries. Proceedings of the Colloquium Comparison of the Theoretical Foundations of Terminology in Eastern Europe and the Western Countries* (pp.39-57). Würzburg: Ergon Verlag].

10. Myking, J. (1997). The sign models of terminology - Recent developments and current issues. *Terminology Science & Research, 8*(1-2), 51-62.

11. Myking, J. (2001). Against prescriptivism? The 'socio-critical' challenge of terminology. *Terminology Science & Research, 12*(1-2), 49-64.

12. Nuopponen, A. (1996). Terminology online: From term banks to the World Wide Web. *Terminology Science & Research, 7*(1), 21-27.

13. Picht, H. (2007). Terminology yesterday, today and tomorrow [Electronic Version]. *Terminology Science & Research, 18*. Retrieved October 20, 2009, from http://lipas.uwasa.fi/hut/svenska/iitf/tsr2005/vol18/vol18_pic.php

14. Pozzi, M. (1999). The problems of defining 'concept' in philosophy, cognitive psychology, neurological sciences and terminology. *Terminology Science & Research, 10*(2), 30-50.

15. Rogers, M. (2004). Looking back to get ahead: A historical overview of term formation and regulation. Comment on Terminologie in der Praxis der Ukraine. *Terminology Science & Research, 15*, 153-162. [Reprinted in G. Budin, C. Laurén, H. Picht, N. Pilke, M. Rogers & B. Toft (Eds.). (2006), *The theoretical foundations of terminology comparison between Eastern Europe and the Western countries. Proceedings of the Colloquium Comparison of the Theoretical Foundations of Terminology in Eastern Europe and the Western Countries* (pp. 153-162). Würzburg: Ergon Verlag].

16. Schmitz, K.-D. (2004). Comment on terminological dictionnaries and data banks. *Terminology Science & Research, 15*, 81-90. [Reprinted as Terminological dictionaries and data banks; comments on the paper of L.B. Tkacheva and S.D. Shelov. In G. Budin, C. Laurén, H. Picht, N. Pilke, M. Rogers & B. Toft (Eds.). (2006), *The theoretical foundations of terminology comparison between Eastern Europe and the Western countries. Proceedings of the Colloquium Comparison of the Theoretical Foundations of Terminology in Eastern Europe and the Western Countries* (pp. 181-190). Würzburg: Ergon Verlag].

17. Wright, S. E. (2003). From the semiotic triangle to the semantic web. *Terminology Science & Research, 14*, 111-135. [Reprinted in Budin, G., Laurén, C., Picht, H., Pilke, N., Rogers, M., & Toft, B. (Eds.). (2006). *The theoretical foundations of terminology comparison between Eastern Europe and the Western countries. Proceedings of the Colloquium Comparison of the Theoretical Foundations of Terminology in Eastern Europe and the Western Countries* (pp. 69-99). Würzburg: Ergon Verlag].

TradTerm (1)

1. Desmet, I. (2002). L'analyse du sens en terminologie: Théorie et pratique de la définition terminologique. *TradTerm, 8*, 149-168.